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(October 8, 1897.)

AN
ESSAY
ON THE
HYDROPHOBIA:

To which is prefixed

The CASE of a Person who was
bit by a MAD DOG; Had the HYDRO-
PHOBIA; and was happily cured.

By CHRISTOPHER NUGENT, M.D.
in Bath.



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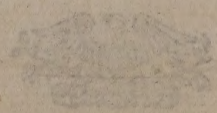
M.D.CC.LIII.



HYDROPHOBIA

The Case of a Person who was
in the Mad House, Had the Hydro-
phobia, and was highly cured.

By CHRISTOPHER NUGENT, M.D.



LONDON.

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by M. Cooper in Pall-mall.

MDCCLIII.

T H E
P R E F A C E.

THE following History of an Hydrophobia, from its first Rise to its final Defeat, can hardly prove either disagreeable, or useless. To this I have annexed some Inquiries; which, it is hoped, will be of Use too; as they tend to rescue this Article of Practice from Empiricism; and to weaken an implicit Deference, that hath so long, and so unsuccessfully, been paid to certain Opinions concerning the Poison of mad Dogs; the manner of its operating in the human Body; and the Nature of the Distemper it produces.

The Case, as a Narrative of Facts, I have given, with the severest Eye to
A 2 *Truth,*

Truth, as far as I was able to trace it. The Queries, I address to the learned, the experienced, and the candid, of my Brethren of the Faculty: These are the Judges I would be tried by; because they who are competently aware of Difficulties, are usually the most favourable Censors of Defects.

These Papers had been published a good deal earlier, but I waited to see whether any of the different Moons, or Seasons of a Year, might bring on a Relapse of my Patient's Disorder. Perhaps they may seem to be published rather too early for the Condition they are in. I need not enumerate their Imperfections: The Judicious will readily find them out; and will, I hope, as readily and humanely excuse them, as the Imperfections but of a rough Draught of
what

what may one time or other possibly appear under fewer Disadvantages. The Road leading to what I sought, was intricate, unfrequented, and dark; and I took no Guide; thinking it indeed not very prudent to trust to People for Guides who had themselves been always disappointed in the same Pursuit; and I knew not of others.

In these Inquiries, I have endeavoured to clear away some Rubbish that for many Ages had incumbered this outlying Skirt of medical Ground: I have even attempted to reclaim, and bring it within the Pale of regular Practice. I am sensible, that many handsome things have been said, and that much Erudition hath been poured out, upon this Subject. Authors of all Characters have been viewed, and re-viewed, and cited with great

Dignity

Dignity and Address : But after all, what one old Error hath yet been dispossessed ? what rational Indication of Cure ascertained ? or regular Method of Practice established ? These are the Ends ; and if these are not obtained, what is done ? what is a Profusion of glittering Means that answer no End ? or a gay Apparatus of useless Scaffolding, without the least Vestige, either of any Edifice built, or any Foundation laid to build on ?

*I am now to account for some Repetitions, that may seem to occur in the Perusal of the following Sheets ; and I beg leave to offer ; that, to convey a tolerable Idea of the Nature, and Operations of the Poison of mad Dogs, where the Cause proceeds so much out of the Reach of common Observation ; it was necessary to com-
pare*

pare the Progress, and Effects, of that Poison, with those of some others, whose Steps are more easily traced, and whose Remedies are better known. So many Analogies, and such different Comparisons of different morbid Causes that produce like Effects, have given Occasion to something like Repetitions; which, I imagined, it was better to submit to, than leave my Meaning obscure; or give my Reader the Trouble of too many References to former Pages and Paragraphs.

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 better to ~~omit~~ than leave my
 Reader to find out the same.

ERRATA.

Page 93. line 18. read Salt of Amber.
 172. l. 7. for very different, read opposite.

THE
C A S E, &c.

*E*Lizabeth Bryant, Servant to Mr. Rogers, Jeweller, in Bath, about 22 Years old, of a good Habit of Body, partaking chiefly of the Sanguine and Phlegmatic, and in the main healthy, was, on the 24th Day of June 1751, bit by a mad Turnspit Dog in Two Places: One was on the third Finger of her right Hand, pretty near the Joint next the Nail: From this there issued some Drops of Blood: The other was on the Back of the same Hand: The
B Skin

Skin was pinched through, but it did not bleed. These Sores were soon healed, without any particular Application or Trouble.

THIS young Woman, soon after she was bit, the same Day, observing the *Dog* more sullen than ordinary, and frothing at the Mouth, began to suspect he was *mad*; and, by way of Trial, minced a little Meat, and gave it him; of which he took some in his Mouth, but could not *swallow* it, but soon let it drop, together with a good deal of *Froth* and *Slaver*. This, another *Dog* that came in, licked up, and eat; and was killed, *slaving* and *mad*, about three Weeks after: But the *Dog*, that bit the young Woman, died, *without Violence*, the next Day after he had bit her.

A Neighbour, it seems, told her the *Dog* was not *mad*; and that he died only of somewhat that stuck in his Throat; which made her neglect the Accident; and nothing was done for her till three Weeks after; when Mr. *Wright*, an eminent Surgeon and Man-Midwife here, having had Occasion to visit Mrs. *Rogers*, and hearing what happened to her Maid, ordered her immediately to the Sea; where she was dipped, till she could bear it no longer. Upon her Return home, he had her blooded at the Arm of the Hand that was bit. He then gave her four Doses of the *Pulvis Antilyssus*, according to the Directions published by Dr. *Mead*; of which, she took the first, the 16th Day of *July*: On the 20th she was sent to the *Cold Bath*, and continued

nued it for four Mornings successively: After which, finding her complain of a *Numbness*, and some *Pain*, in the Arm and Shoulder of the Hand that was bit, he ordered her the *Musk* and *Cinnabar* Powders, commonly called Sir *George Cobb's* Medicine, for two Nights: She thought her *Spirits* greatly relieved, and said she was very well: He would have had her into the *Cold Bath* next Day again; but that she said she had her *Catamenia*.

THIS was brisk Treatment for the Time; and, one would have thought, as likely to prevent the usual terrible Effects of the *Bite* of a *mad Dog*, as any perhaps hitherto known or practised: But it proved insufficient; for, two Days after the last Bathing, she was seized with an *Hydrophobia*.

BEFORE I proceed to give an Account of this acute and ruinous Part of the Disorder, it may not be amiss to look back on some Particulars that occurred between the time of her being bit, and that of her being taken ill. One need not be ashamed either of Minuteness or Prolixity, where Stile, Manner, and every other Consideration, ought to give way to the single Advantage of being clearly understood : Neither ought any Circumstance to pass for trifling or unnecessary, that may tend to cast any Glimmerings of Light on a Subject of this dark Nature, and general Concern ; or contribute ever so little towards establishing *just Indications of Cure*, in a Disorder, that, once arrived at this precipitate Stage, had proved so difficult

ficult and dreadful ; and, in some measure, unfortunately eluded the Endeavours of almost all Ages.

ACCORDING to the young Woman's own Account, and what could be gathered from the Family she lives in, she passed the first Fortnight after she was bit, without any remarkable Change. After that, she began to lose her Colour, and to grow somewhat uneven, restless, and fretful in her Temper ; sometimes heavy, indolent, and careless of her Business ; and sometimes rather too lively, dispatching a good deal more Work than usual, in a little time : Her *Appetite* gradually failed, and she was often sick at *Stomach* : Her *Nights* were bad ; disturbed with Dreams, of *Dogs* fighting, and sometimes pursuing her so closely, she could

could hardly escape them; and of Danger, from falling into deep *Pools* of *Water*, and being forcibly kept in; and this too, before she was sent to the *salt Water*, or (as she declares) either had, or could have had, the least Thought of her being ever advised to try that Remedy.

AFTER her Return from the *Sea*, in Addition to her former Uneasinesses, she had frequent convulsive Catchings in her *Hands* and *Arms*, particularly in *that* which was *bit*. Her Dreams of *Dogs* and *Water* tormented her as before; but, along with that, she began to have some Terrors at the *Barking* and *Howling* of *Dogs*. She could, as yet, bear to be where *Dogs* were; but their first Appearance made her tremble;

tremble ; and she still shudder'd whenever she touched them.

It may, however, be worth remarking, that, about *two-and-thirty* Days after she was bit, *viz.* the Day before she was taken ill, two red *Pimples*, with little white Heads, broke out just upon the *Marks* the *Dog* had left, where he had pinched the Skin on the Back of her Hand ; but these Pimples disappeared in a little time. But to return to the *Hydrophobia* :

ON *Saturday* the 27th of *July*, in the Morning, about five Hours after the *Moon* was at full, this young Woman, soon after she returned from Market, was *all at once* seized with a Pain in the third Finger, and at the Back of her *Hand*,
just

just in the *Places* where she was *bit* ; which, as she described it afterwards, felt to her as if some *cutting Instrument* had been *darted* into those *Places*, and from thence proceeded *ripping* through the *Flesh*, all along her *Arm* up to the *Shoulder*, and thence across to her *Throat*, where it seemed to her to *end*, and exert its greatest Force ; producing, she imagined, some *large Substance*, that she thought would have stopped up her *Throat*, and strangled her every Moment : She cried out, as well as she could, that she should be choaked ; and took fast hold of the Fore-part of her *Neck* and *Throat*, as if to hinder its closing up, and prevent her being immediately suffocated. From this time she could not bear the *Sight* of *Water* ; nor even the *Noise* of Water falling from

a *Pump* without Doors, in a back Place near where she was ; much less could she *swallow* any ; not even a *Drop*. She was in the utmost Terrors and Agony upon hearing *Dogs* bark or howl. She soon lost her *Voice* ; and, except at a few Intervals, could only make a Shift, after many Struggles, and much mouthing, to stammer out a long imperfect *Yes*, or *No*, in broken sharp Hisses, without any Articulation.

HER *Pain* did not seem to her to be one continued, uniform, fixed thing ; but to consist rather in a Number of quick Shootings, and Successions of Pain, that *always* began at the Parts bit, darted up the Arm, ended at her Throat, and so on repeatedly, still in the same Round or Whirl ; the Returns quicker or slower,

flower, and the Pain more or less acute, as the Occasions of seeing or hearing *Water*, hearing the *Barking* of *Dogs*, and the like shocking Incidents, happened to recur ; in which Cases, the Successions of the *darting* Pain were almost uninterrupted ; and the Pain itself, she said, intolerable ; attended with a *Suffocation*, *short Breathing*, *Dizziness*, violent *Risings* at her *Stomach*, *Breast*, and *Throat* ; and strong *Catchings*, at her *Fingers* and *Arms*, and almost all over, as if she were just going into *general Convulsions* ; which it is probable she must have done, if *Water* or *Dogs* had been kept in her *Sight* or *Hearing* for any time together.

SINCE her Recovery, she has often wondered People would give themselves the Trouble of stifling

poor Wretches like her, as she heard was often done, between Feather-beds ; for, she said, they needed only to have kept *Water* in her Sight, and it would have certainly done the Work in a few Moments.

SHE was no sooner taken ill than Mr. *Wright* was called upon, and he came. He gave her a little *Water* and *Spirits* of *Hartshorn* in a small Cup, and she took of it, but suddenly threw it out of her Mouth, and some Froth and Phlegm along with it. Some Women who stood by, insisting she had only *Hysterics*, Mr. *Wright*, without letting the Patient know any thing of the Matter, had a Basin of *Water* brought in, as if by chance ; but the Moment she cast her Eye that Way, she shrieked out most vehemently ; tossed her

her Head back with the quickest Action imaginable ; and fell into the complicated *Distress* just now recounted.

UPON this Mr. *Wright* desired a *Physician* should be sent for : I was soon there, and found the poor Creature in this *dismal* Plight ; well enough in her *Senses*, and eager and struggling to express her *Thoughts*, but in vain. Her Countenance was a little *flushed*, and she had an *eager, scared, fierce Look*. Her *Pulse* was easy, bold, and regular ; her *Tongue* moist, and clean ; and she had no *Thirst*. We tried her now again with the Sight of a *Basin* of *Water*, and it threw her into the Sort of *convulsive Agony* before described.

IN this *Extremity*, we concluded to have her *bled*; and she immediately was, to about *fifteen Ounces*.

ORDERED a Paper of Sir *George Cobb's Musk* and *Cinnabar* Powders to be taken in *Honey* every three Hours; to begin as soon as they could possibly be got ready:

A Pill of two Grains of the *Thebaic Extract* (pure Opium) to be given every three Hours, along with the *Powders*, till *Rest* could be procured: And

A Plaister, with *Galbanum*, and half an *Ounce* of the *Thebaic Extract*, to be applied to her *Throat* and *Neck*, immediately.

THIS was about Eleven o'Clock in the Morning, she having been first seized between Nine and Ten.

THE

THE *Musk* and *Cinnabar* Powders, so often mentioned in this Case, are thus to be made up :

TAKE native and factitious *Cinnabar*, of each twenty-four Grains ;

Musk (which ought to be very good), sixteen Grains ;

Let them be finely powdered, and mixed up into a Bolus with a little Honey ; or (because Honey is sometimes disagreeable) with Syrup of Saffron, of Maidenhair, or almost any other Syrup you please.

In the Evening.

WE found, though she had been in great *Pain*, and very restless most Part of the Day, and at one time quite *intractable*, that she was nevertheless, in the main, a little easier at

Inter-

Intervals; and could tell those about her, she thought she found herself somewhat relieved by the *Bleeding*. She now, by much Persuasion, attempted to swallow a *Spoonful* of *Broth*; which, after holding and working a good while in her *Mouth*, she at length effected, with great Difficulty, and many odd *Gesticulations*, and *Graspings* at the Bedcloaths, or any thing she could lay hold of, as it were to use every *Aid*, and summon all her *Forces* to enable her to compass it. In this manner she made a shift to get down three Spoonfuls. Her *Blood* looked very well.

THIS *Difficulty* in swallowing *Liquids*, she afterwards told us, did not proceed from any Feel of *Soreness*, or *Pain* it caused at those Times,

as

but from a mere *Inability* to get them down ; owing, as it then seemed to her, to something, that, as often as she made the Attempt, still suddenly rose in her *Throat*, and opposed their Descent, so as to make the swallowing them seem utterly impracticable ; not unlike the Effects of the *Globus Hystericus* in some *hysteric* Paroxysms.

DIRECTED, that she should take the *Musk* and *Cinnabar Powders*, and the *Opium* Pill, every three Hours, as before :

AND that the Hand that was bit, and that whole Arm, should be well chafed with warm *Sallad Oil*, several times a Day.

Sunday Morning, the 28th.

ONLY two Papers of Powders, and two Pills, taken in the Night.

D

She

She brought up the last Dose of both; and being being very sick at Stomach, they gave her no more till Morning. She had little or no Sleep, but lay pretty quiet. She made some Water in the Night. Her Skin now rather *moist* than *dry*: And she could speak, though in a shrill, disagreeable, whining manner. Her Pains still very troublesome; and her Swallowing but little better. Her Pulse was strong, and quicker than Yesterday. She had no Stool since *Friday*; viz. the Day before she was taken ill.

HAD her bled again, to about twenty Ounces.

Prescribed a Clyster with *Antimonial Wine*:

That the Powders and Pill should be continued every three Hours, as before: And

That

That she should be chafed with the *Sallad-Oil*, as Yesterday.

Sunday *Evening*,

SHE could swallow Liquids somewhat better ; and had got down a Pint of one kind or other, at times, since Morning. Her *Urine* little in Quantity, and of a natural Colour, with a good *Sediment*. She had no Sleep ; and the *Clyster* had had no Effect.

ORDERED a Repetition of the *Clyster* ; and (as she complained of great Heaviness and Sickness at Stomach, and had thrown up her last Dose of Powders and the Pill the Night before), in case her Sickness continued, ten Grains of *Turbith Mineral*, to be taken in a *Bolus* ; and the Powders and Pill every

three Hours afterwards, as soon as her Stomach could bear them. It seems, a good deal of the second *Clyster* returned immediately after it was given: It was therefore advised, if what remained did not succeed, to use a Suppository of *Soap*, rolled in powdered *Salt*.

SHE had now taken four Grains of the *Thebaic Extract*, and three Doses of the *Musk-Powders*.

Monday Morning, the 29th.

FOUND her still better in the main. The *Clyster*, though a good deal came off almost as soon as it was given, had wrought well; by which she thought herself much relieved. She lay most of the Night quiet; and sweated a great deal, tho' she slept but little. Her Sick-
ness

ness went off; so the *Vomit* was not given. Her *Swallowing* much better; and she got down near a Quart of one thing or other in the Night. Very thirsty. Pulse still pretty full. This last Night she took six Grains more of the *Thebaic Extract*, and three Doses of the Powders.

THIS Morning had her blooded to about 12 Ounces.

THE *Opium* Plaister to be renewed to her Throat; but with only two Drachms of the *Extract*.

THE *Oil* to be chafed in, as before:

THE *Musk* and *Cinnabar* Powders to be continued; and to drink often of *Barley-water*, with *Nitre*, &c. because of her Thirst.

Monday Evening.

EVERY way better. The Pain in her Hand and Arm was quite gone:
But,

But, though she could take a Pint Bason of *Tea* in her Hand, and drink it off, yet her Fear of *Dogs* and *Water* still continued. She sat up for a Couple of Hours this Day, in a Room that was rather too airy; and many People coming in, and going out, the Door was opened upon her too often.

THE *Musk* and *Cinnabar* ordered to be taken still, as before.

THE *Oil* to be still chafed in; and *two Grains* (only) of the *Extract* to be given at Night.

Tuesday Morning, the 30th.

SHE had been very sick at *Stomach* most Part of the *Night*, especially for some Hours about *Midnight*: Had slept but little, but sweated a good deal. Complained of *acute Pains*

Pains all over, and seemed very heavy and languid. She made a reasonable Quantity of Urine, with a *Sediment* ; and continued to swallow her *Liquids* very well, This Change in her for the worse, in some Particulars, was (very probably) owing to her having caught Cold while she was up the Day before. Her Pulse somewhat lower than usual.

Now advised the *Musk* and *Cinabar* to be given but every *six* Hours.

A Repetition of the *Clyster*, without the *antimonial Wine*. And

THE *Oil* to be continued, and rubbed on, as before.

THE *Nitre* was omitted, on Account of her Sickness at Stomach ; and the *Opium* now was quite laid aside.

Tuesday

Tuesday Evening.

HER Sickness at *Stomach* much abated, and her *Pains* less *acute*. The last *Clyster* did its Office very well, and seemed to relieve her. She slept and sweated a good deal since Morning; and drank plentifully of *Watergruel*, and *Baum Tea*.

THE *Powders* to be given every *six* Hours, as before.

Wednesday Morning, the 31st.

FOUND her a great deal better; but she had been again, about Midnight, taken with a *Fit of Sickness* at *Stomach*, as she was the Nights before; but did not hold near so long. She afterwards slept well, and sweated plentifully. The *Pain* she complained of in her *Bones* quite gone.

gone. Her *Urine* good, with a *Sediment*. Little or no *Thirst*. Her *Swallowing* very easy : But her Dread of seeing *Water*, and *Dogs*, still continues.

ORDERED the *Powders* should be given every *six Hours*, as before.

THE *Opium* Plaister was taken off this Morning.

Wednesday Evening.

SHE complained of some Sickness still at her *Stomach*. She slept a good deal ; and was languid, heavy, and disposed to slumber on. Her *Sweating* continues. Her *Head* ached. A *Sediment* in her *Urine* : And her *Pulse* fuller and stronger.

ADVISED that the *Powders* should now be taken only *Night* and *Morning*.

E Thurs-

Thursday Morning, Aug. the 1st.

SHE had slept most Part of the Night, and *sweated* a great deal. Had no Return of Sicknefs at *Stomach*, as in the foregoing Nights. Her Languor and Heaviness now almost off; and the Effects of the *Opium* seemed almost over.

THE *Musk* and *Cinnabar* Powders to be taken as before, Night and Morning: And

MR. *Wright* applied a Caustic for a Fontanel to the *Arm* that was affected.

Thursday Evening.

THOUGH otherwise tolerably well, she complained of a little Heaviness still in her *Head*. She had slept some Hours since Morning. She had
no

no *Thirst* ; but her *Pulse* was depressed and flow. She was asked, if she thought she could now bear the Sight of *Water* ; and, upon her saying she did not know but she could, a Basen of *Water* was brought : But the Moment it came in her *Sight*, she cried out, with Signs of great Terror in her Countenance, and desired to have it immediately taken away ; and so it was : But she nevertheless, all of a sudden, grew *pale* and *ghastly* ; got a *Shortness* of *Breathing* ; a great *Sickness* at *Stomach* ; a *Giddiness* in her *Head* ; and *convulsive* short Catchings almost all over her, especially in the *Hand* and *Arm* first affected. Being now asked to drink a small Basen of *Tea*, that had been brought her to drink before this Experiment, she refused it, saying, she could not swallow it,

because of the great *Sickness* at her *Stomach*: But her *Symptoms* gradually abated, and in about ten Minutes she drank down her *Tea*.

THE *Powders* were ordered Night and Morning, as before.

Friday Morning, Aug. 2d.

SHE had slept but ill, especially the Beginning of the Night; and when she did, her Sleep was disturbed with *Dreams* of falling into large *Pools* of Water, being pursued by *Dogs*, and the like; which it had not been in any Sleep she fell into before, since the 29th; that is, for the two or three last Days and Nights. Her *Sickness* at *Stomach*, occasioned by Yesterday's Bason of *Water*, was not yet quite off. Her bad Night, and frightful *Dreams*, are also very referable to the *same Cause*.

HAV-

HAVING had no Stool since *Tuesday*, a *Clyster* was prescribed: And
The *Powders* as before.

Friday Evening.

SHE told us she had ventured to see a *Bason* of *Water* since Morning, and bore it very well, except that it made her a little *giddy*; and, for our Satisfaction, desired one should be brought her then; which being done, she sat up in Bed, and said she now looked on the *Water* without Terror, though it gave her a Touch of *Giddiness*. This Evening there appeared some *red Pimples* here and there on the *affected Arm*; but they were mostly gone off by next Morning.

THE *Powders* ordered, as before.

Satur-

Saturday Morning, Aug. the 3d.

SHE slept but little the preceding Night ; possibly owing to the *Water-Trials* of the foregoing Day ; but was otherwise pretty well. Being asked, if she thought she could now bear the Sight of *Dogs* ; she said, she could talk of them without any Dread ; but if she heard them *bark* or *howl* (as where she lay, it happened she sometimes did) it still gave her *Tremblings* ; and she *shuddered* at the Thoughts of seeing one.

THE *Powders* to be continued Morning, and Evening, still.

Sunday, Aug. the 4th.

SHE had a good Night ; and was now almost free from her *terrifying Dreams*. This Day she saw a *Dog* ; but with some small Apprehension, and Trembling.

DIRECTED that the *Powders* should be used now but once in twenty-four Hours ; viz. at Night.

AFTER this, she mended in *Appetite, Strength, and Spirits*, every Day, till about the 15th or 16th, that an Accident or two happened, which had like to overturn all we had been doing.

A Man, dressed, they say, like a *Gentleman*, went to Mr. Rogers's, and asked a Servant there, for the *young Woman* that was ill : As soon as she came, he stared her *earnestly* in the Face ; and told her, he had heard she was *cured* ; but he could *assure* her she *was not* ; that she *looked extremely ill* ; and that it was *impossible* she ever should be *cured*. Then, abruptly catching hold of her Hand, and pretending to feel her *Pulse* ; he
said,

said, her *Pulse* was *very bad*; and, as if to affright her yet more effectually, added *another L^y*, telling her, that the *Doctor* and *Surgeon* were just coming; that they would have her bled immediately, and make her take all the Remedies over again; but it would be to no Purpose: And so he walked off, leaving the poor Creature half dead with the *Fright*, and scarce able to tell her Mistress, and the other Maid, the Story.

A Day or two before this, as she went through the *Market-place*, a Woman bolted out of a House upon her, and asked her how she did: Being answered she was well, she told her; *Ay, 'tis a Lightning before Death: You may fancy what you please; but you'll be dead in a Week, for all that.*

THESE

THESE unhappy Instances of human *Weakness*, or *Wickedness*, whichever it was, I could have willingly omitted here ; but the *Effects* they produced, and the *Medicines* that subdued those *Effects*, seeming to cast yet more Light on the true Nature of the Subject, I imagine they ought to be made known, without Apology or Disguise.

It must easily occur, that such *Shocks*, in such a *Case*, and at so *critical* a *Time*, may produce the worst of *Effects*. A *Body* already weakened by Evacuations and Sufferings, and a *Mind* so lately and violently agitated, and but just recovering from the greatest Terrors, are very easily affected ; and might, by the strange Treatment now described, have been overet beyond all Hopes of Remedy.

AND she was indeed much affected. She grew heavy, melancholy, and sleepless : She intirely lost her *Appetite* ; and her *Arm* became hot, fore, and inflamed, where the *Caustic* had been applied.

HOWEVER, by means of an *Opiate* at Night, and proper Applications to her *Arm*, her *Symptoms* abated, and she mended, though slowly, till about the 23d, that she grew uneasy again, nearly as before, all to the *Soreness* of her *Arm*, which I think troubled her no more.

THE *Musk* and *Cinnabar* Powders were again prescribed to be taken at Nights, with *Elder-flower* Tea ; for all her Amendments proceeded with a *Sweat*, more or less ; but having sweated little or nothing, and her

Uneasiness of Mind, want of Rest, and other Symptoms, continuing, an *Opiate* was given on the 25th; and next Day, a Dose of the *Musk* and *Cinnabar* Powders: She grew better in the main: But, unluckily happening to see the Man, who had already so frightened her, ride at a Distance along the Road by Mr. *Rogers's* House, all her former Apprehensions and Melancholy returned; with a Heaviness, and Loathing at Stomach; a great Dejection of Spirits; an utter Despair of ever doing well; and a fullen Intractableness, as to the taking Remedies; differently from what her Disposition had been all along before, except the Day she was first seized, during some Hours of which, she seemed quite ungovernable. The bare *Sight* of this extraordinary Person was almost as bad to

her, at this time, as that of a whole Pack of Hounds could have been, even when her Dread of *Dogs* and *Water* ran highest.

SHE was nevertheless, by much ado, prevailed on to take a *Vomit* of of *Ipecacoanba Wine* in the Forenoon, and a Paper of the *Musk* and *Cinabar Powders* at Night ; but she had neither Sleep, Sweat, or any other sensible Benefit ; but was next Morning as much disordered as the Day before, still complaining of a *Sickness* and *Loathing* at *Stomach*.

SHE had had no Stool since Yesterday's *Vomit* ; a *Clyster* was therefore ordered ; which operated ; but she was little the better.

NEXT Morning, finding her Pulse rather *bold*, though her Spirits were
low,

low, she was bled to about 12 Ounces; and Draughts, with *Salt* of *Wormwood* and *Juice* of *Lemons*; and some *Bitter*, and *anti-histeric* Medicines; were prescribed at the same time.

IN the Afternoon we found her, in most respects, as before; but with an additional Complaint, of *quick, shooting Pains* in the *Hand* that was *bit*, and all up that *Arm*; with several *Catchings*. This was an alarming Circumstance; and yet, as she had so lately undergone many Evacuations and Shocks, I hoped it might now be all but *simple Hysterics*; which, I supposed, may be very likely to affect those Parts of the nervous System most, that had already, though from a different Cause, been agitated and weakened by Spasms and Disorders before; and consequently

quently the Parts of the animal Oeconomy most influenced by these Nerves ; of which, the *affected Arm* was certainly one.

THIS led me to think, as indeed I often did before in this Case, that *Campfire, Assafætida, Musk, Opium, Castor, wild Valerian*, and the like antispasmodic Medicines of our first Class, given in larger Doses, and diversified according to the Patient's Condition and Constitution, may do a great deal, not only in this Exigence, but even in the *Hydrophobia* ; and Mr. *Wright*, whose Assiduity and Tendernefs through this whole Affair deserves the highest Commendation, on my declaring what I thought of this Matter, mentioned a particular Mixture of *Assafætida, Musk, and Campfire*, which he had heard the
learned

learned Dr. *Hallet*, of *Exeter*, speak of with great Praise in some hysteric Cases, from his own Experience: I therefore prescribed 12 Grains of *Affsaetida*, 10 Grains of *Musk*, and six Grains of *Camphire*, to be mixed up into a *Bolus*, and taken as soon as it could be prepared; and another, at Bed-time; and the *saline nervous Draughts* between whiles.

NEXT Morning, the 3d of *September*, she was much mended; had *slept* and *sweated* in the Night; was free from *Pains* and *Catchings*; her *Spirits* were raised, and her *Stomach* was easy.

Two of the *saline Draughts* were now ordered for the Day; and the *foetid Bolus* for Night.

NEXT

NEXT Day, viz. the 4th, she was still better; and the *Draughts* and *Bolus* were ordered as before.

AFTER this, she seemed in all respects in so good a Way, as not to want any more Medicines; and, in some time more, recovered her Flesh and Strength; grew as well as ever; and continues to this Day, without the least Return, or Sign, of her old Disorder.

A N

E S S A Y, &c.

THIS Instance of the *Hydrophobia* now before us, is distinguished with so many Circumstances that seem to lead to a Discovery of the true *Genius*, and *Cure*, of this frightful Distemper, that I could not forbear trying my small Forces, in the following *Queries*. Truth is my Aim ; and I hope I have not intirely missed it : If I have ; I can only wish this Endeavour may luckily excite others to undertake the humane Task, and supply my Deficiencies.

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WHATEVER may be advanced concerning the various Kinds of Motion that must concur to the Subsistence of an animal Function ; it seems those of Vibration, Pulsation, and Oscillation, if to be reckoned different Motions, are generally counted among the principal. All Nature vibrates ; the inanimate, as well as the animate ; and is in a constant Tenor of Pulsation through all its Parts. Our livelier Thermometers shew the Air is so : And Observation furnishes Reasons to conclude, there is not in the Universe, perhaps, a single Atom that is *perfectly* at Rest ; though Rest is the very Condition every Atom in the Universe would undoubtedly subside into, were it left to its own natural Disposition. *Nature*, as we are apt to call the general Oeconomy of the material World, is always right ; though every thing within

within the Compass of that vast Oeconomy is in a State of Violence ; and yet every thing at the same time, in spite of its own Nature, wonderfully conspiring to the Order, Beauty, Magnificence, and Usefulness, of the Whole : I say, *in a State of Violence ;* and *in spite of its Nature ;* because nothing is suffered to proceed according to the real, direct Tendency of its own Nature : All Bodies affect to be at Rest ; yet no Body is at Rest. All Bodies affect to move in right Lines ; yet no Body really moves in a right Line *. In the ani-

* Should the Motion of Light be thought an Exception to this ; Let it be considered, that even the Rays of Light, with all their Fineness, and Velocity, are still subject to the common general Laws of Gravitation, Attraction, &c. Sir Isaac Newton has shewn they have their Attractions, Reflexions, Refractions, Pulses, Vibrations, Fits of easy Reflection and Transmission, and various Inflexions, Deflexions, and Disturbances, enough to secure the Probability of what is here said.

mal Oeconomy, there is not perhaps a *Fibre* that is just in the Position it would assume, were it at Liberty to change: They are always kept upon the Stretch; always beyond their natural Point of Rest; as appears from their still shrinking back, and leaving a *Gap* where-ever they are cut. Thus are all material Beings, as far as we can see, every Moment absolutely controuled in their very Essences; and that very Controul absolutely necessary to the Conservation of all; plainly shewing, how *indispensible* the ever-gracious Presence, and all-powerful Efficacy, and Coercion, of the great over-ruling *First Cause*, must *incessantly* be, not only to the Oeconomy, but Existence, of his whole Creation.

As to the human Body; that is constituted of (what are termed) *solid*

lid Fibres, which are constantly in *Exercise*; and *softer Fluids*, that are constantly in *Motion*. The Structure of an animal Fibre hath given Rise to a great deal of curious Speculation: But its Elasticity; its Contractions and Dilatations; its being liable to be stimulated into greater and quicker Efforts of Contraction and Dilatation; and sometimes into constrictive Spasms; these are *Facts*, that, I think, are not denied by any body.

Query I. IF the *natural* and vital Action of the Nerves, and nervous Solids, in the human Body, solely consists in a *regular* Succession of alternate Contractions and Dilatations; and that the Use of this natural regular Action is, to propel, prepare, and distribute the Fluids, for the Secretions, and other necessary Purposes, of the animal Oeconomy; must

must not the *preternatural* Action, or rather Passion, of these same Nerves and Solids, consist in *irregular* Emotions, and spasmodic Strictures? And must not such Emotions and Strictures, so different from the natural salutary Oscillations, cause a disturbed Propulsion, a defective Preparation, and an unequal Distribution, of the Fluids; and consequently, bad Secretions, and a disordered animal Oeconomy; and this Disorder, greater or less, according to the Cause and Degree of the excited Spasms; the Structure and Office of the Parts affected; and various other Circumstances?

2. W H A T E V E R the *immediate* Cause of the natural and salutary Oscillations of the Solids may be; is not that of their disorderly spasmodic Emotions, on all hands, allowed to be,

be, either some *material Stimulus*; or some *affecting Thought*?

3. ARE not Disorders of the nervous System generally reputed the first sensible morbid Effects of all Poisons, and poisonous Causes, that have got Admission into the Habit? And, as to the Cure of these Disorders, is it of any Consequence, whether they are produced by the *immediate* Application of the first stimulating virulent Cause; or by the *intermediate* Action of a nervous Fluid, or animal Spirits, that are poisoned, and perverted by this first Cause?

4. IF it is generally agreed, that the first morbid Exertions of poisonous Causes are purely nervous; and that being flung into spasmodic Emotions and Strictures is the only manner

ner in which the nervous System can be preternaturally affected, except perhaps when some Nerves are rendered paralytic ; is it not to be concluded, that the Poison of a *mad Dog* acts in just the same way ; and that its first sensible Effects are purely spasmodic ?

5. MAY not strong spasmodic Effects of any kind, sometimes, become Causes, and generate new Spasms of a different Character, and Tendency, from the old ? As in *Midwifry* ; the Spasms of Labour, have, in some Instances, brought on *Histeric* Spasms exactly resembling Labour ; but which, instead of forwarding the Birth, only retard it, and weaken, and wear out the Patient, to no Purpose. These spurious Pains *Deventer* calls *Dolores tergiversantes*. He usually allay'd them with *Opium* ; and the genuine Labour-

Labour-Spasms came on soon afterwards, as he could wish. In like manner, may not the Spasms excited by the Poison of a *mad Dog* superinduce others like the first, which yet are of a different Nature ; thus complicating the first virulent Spasms with new ones of another Denomination, as Hysterics, &c.?

6. Do not Spasms, and spasmodic Constrictions, be their Origin virulent or common, frequently bring on Inflammations, and overset the animal Oeconomy, unless the Strictures are released within a certain time, suitable to the Exigence, and proportioned to the Kind, Cause, Greatness, Situation, and other Circumstances, of the affecting Spasms?

7. IF virulent Spasms, first taking place, bring on Inflammations; and

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the Inflammations other Symptoms ; doth not the Case grow still more complicated ; and in its Progress seem, at every new Step, to require a different Method of Treatment ; one, whilst it is *purely spasmodic* ; and another, when the *Spasms* are complicated with an *Inflammation*, and a *Fever*, and *Heat*, and *Thirst*, and whatever other superinduced and accruing Symptoms may be successively generated one by another, during the Course of the Disorder ?

8. IN an *Hydrophobia*, are not the *Fauces*, *Throat*, *Oesophagus*, and *Stomach*, among the larger Organs that are most directly and violently attacked ? And have not they all, or some of them at least, been hitherto generally thought to have been *inflamed* from the first Moment the Disorder

Disorder appears? *Boerhaave* calls it, *Summè inflammatorius*; supposing, no Doubt, though he considers it as a *nervous* Affection too, that an *Inflammation* is one of its essential, concomitant Symptoms; and yet he says, what I believe is commonly found true, that in the first Stage of the *Hydrophobia*, the Blood always appears to be *omni notâ bonus*. Now if, even in ordinary Inflammations of the *Fauces*, *Throat*, *Oesophagus*, *Stomach*, *Pleura*, or any such larger membranous Parts, there is always a pressing Fever, a quick, and often a rigid Pulse, a Heat, a Thirst, a dry or foul Tongue, and a Mass of Blood very sizzly, and *omni ferè notâ malus*; does it not follow, in this Case of *Elizabeth Bryant*, where a virulent Cause urged every thing else so very precipitately on, that no such *Inflam-*

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nations

mations could have existed ; since she had not so much as one of all these essential Symptoms of a *membranous Inflammation*? And does it not equally follow, that neither an *Inflammation*, nor *Fever*, are amongst the original essential Symptoms of that frightful Disorder ; since Disorders cannot subsist without their Essentials ; and that, without having any of these Essentials of a membranous Inflammation, this Patient most certainly had an *Hydrophobia*, that was, almost all at once, ushered in, and attended, with as many violent Symptoms, still excepting those in Question, as perhaps, at so early a Period, ever met in any one Person ?

9. IF this Patient had not had timely Assistance, is it not probable, since it is what so generally happened
in

in like Cases before, that the *virulent Spasms*, first producing her Disorder, would, after a while, have brought on an *Inflammation* of such membranous Parts as are more usually and peculiarly infested by the Effects of that Poison? And would not such *Inflammations* give a distinct Being to all their own essential Symptoms of a *Fever, Heat, Thirst?* &c. Suppose a Physician is called in, not in one, or perhaps six Hours from the first Appearance of the Disorder; but, what is much oftener the Case, twenty-four, thirty-six, or forty-eight Hours after: Now, finding all these untoward Symptoms raging thus promiscuously together, is it not reasonable to suspect he may think they were all indiscriminately and intimately connected with the Distemper, from its very first Rise; unless
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he were beforehand well apprised of its true, natural, and simply spasmodic Genius? And this Error may not the vague Accounts of Neighbours and Standers-by, who are usually terrified on these Occasions, and seldom have any Skill; and the Reading of Authors, who, almost one and all, speak of this as a Distemper highly inflammatory, be very apt to lead one into?

10. CAN the Signs of Inflammation, Driness of certain Parts, or any thing else that has occurred in the Dissection of Persons who died of an *Hydrophobia*, serve to determine, whether that Inflammation, or Driness, or whatever else may appear there, were originally connected with the *Hydrophobia*; or were only new Symptoms generated in the Course of the Disorder.

Disorder? What, in general, can be more different, than the *Cause* of the Distemper, and *that* of the Death of the Patient? And yet, are not these two Causes frequently confounded together, and mistaken one for the other? Of this, let one Instance serve instead of a thousand: Stones passing the Ureters bring on *spasmodic Strictures*; these, if not released in time, bring on an *Inflammation*; this, a *Mortification*; and the Mortification, *Death*. Here, on opening the Body, the *Mortification* presents itself, and appears to have caused the Death of the Patient: And so it has; though, in reality, it was neither the Cause, or any Part of the Cause, of his Distemper.

II. IN Persons bit by the *Tarantula*, are not the odd, involuntary, sudden

sudden Emotions, and unreasonable
 Aversions, caused by certain *ordi-*
nary Sights and Sounds ; such as their
strange Emotions and Gesticulations
excited by Music ; the Aversion and
Disturbance arising from the Presence
of black or gloomy Objects ; and the
 like disorderly inconnected Affections ;
 are they not all Symptoms of a par-
 ticular Species of *Madness*, caused by
 the Bite of that Animal ? In like
 manner, the odd, involuntary, sud-
 den Emotions, unreasonable Aver-
 sions, and violent Affections, pro-
 duced on so *ordinary* an Occasion as
 seeing, hearing, or touching Water ;
 which is the Case of Persons bit by a
mad Dog ; are not these also Symp-
 toms of another Species of *Madness*
 caused by the Bite of this Animal ?
 And, although these *Maniæ* are ex-
 tremely unlike in many respects, is
 there

there not an evident Analogy between the principal characteristic Symptoms of both? As indeed there seems to be between those of every other Kind of *Madness*; and consequently between the general Operation of their Causes; for, with the vast Variety of Shapes they put on, do they not all agree in their irregular disturbed Affections, fixt Aversions, and strange Emotions? And as to those of the more serious and melancholy Turn; do not they appear as out of the way, and disconcerted, in their stupid Alienations, as the others do in their livelier Extravagancies?

12. Do not the Causes, that immediately excite these *Maniæ*, give Rise also to all their essential and concomitant Symptoms? Or, in

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other

other Words, do not the Causes that give Rise to all the other Symptoms, give Rise also to their concomitant *Maniæ*? In the Case now before us of *Elizabeth Bryant*; has not the virulent Cause, that produced her *Mania*, at the same time also produced the quick Pains darting up her Arm; the convulsive Risings and Catchings in her Throat, at the Approach of Water, still rendering its being swallowed either really or seemingly impossible; her great Difficulty of speaking, and sharp, whining, canine Tone of Voice, when she attempted it; the Swelling and Sickness in her Stomach; the Dizziness and Swimings in her Head; her Anxiety, Oppression, short Breathing, Terrors, Tremors, and the Whole of that dreadful Agony, that made up her Distemper? In one, who had nei-

ther

ther *Fever*, nor *Inflammation*, were not all these Symptoms plainly *spasmodic*; and excited by irregular Vibrations and Strictures in the *nervous System*? And is it not probable, nineteen Parts in twenty of the hypochondriac and maniacal Affections, now so rife amongst us, are owing to spasmodic Causes; none of these being attended either with *Fevers*, or *Inflammations*, except by Accident. Some *Frensies* and *Deliria*, 'tis true, proceed, tho' rarely from an *Inflammation* of the *Meninges* in *Fevers*; or from their *Inflammation* upon sudden Translations of morbid Matter, soon producing a *Fever*? But, even in *Fevers*, are not most of the *Deliria*, that occur, and short *Maniæ*, much oftener the Effects of symptomatic Spasms, from the Connexion of the *Meninges* with other affected Parts;

such as the *Diaphragm*, *Pleura*, and the like ; than Effects from an Inflammation of the *Meninges* themselves ? *Huet's Curatio Maniæ*, &c. where he says, he has often cured maniacal Disorders only with *Opium*, and a few *Purges*, deserves some Notice here ; as it shews the *Maniæ* he cured, must have been all spasmodic ; and that it is more than probable, the *Opium* given so freely in the *Hydrophobia* under Consideration, helped not a little towards allaying the Spasms, and promoting that critical Sweat, by which the Poison was afterwards evaporated, and the Constitution relieved ; at once, in some measure, answering, or mainly contributing to answer, the two grand Indications for the Cure of all inoculated Poisons, that are in Possession, and begin openly to exert their

their spasmodic Genius in the Habit; which Indications seem to be, first, to quiet the Spasms, or at least allay their Violence; and then, in Concert with the animal Oeconomy, to work off the virulent *Effluvia*, either by the Skin, the Kidneys, or some other convenient Emunctory; though that by the Skin is the Discharge Nature seems always most inclined to push for, when she would get clear of Enemies of this active and subtil Character.

13. Do not certain Ideas, and Affections of the Mind, cause Emotions in some particular Portions or *Plexus*'s only of the nervous System, whilst all the others seem to remain, at least comparatively, but very little affected? The Idea of Sourness, let what will excite it, will often set the Glands

Glands of the Mouth a running, and no others ; and how, but by affecting the Nerves that influence those Glands, more than any others? Some sorts of grating Noises will, in just a like manner, set the Teeth on Edge, and affect the Gums, without disturbing any other Parts of the Body. Nauseous Ideas, stirred up by Seeing, Feeling, or even the Mention, of nasty Objects, dispose some Stomachs to Sicknefs and Vomiting, by throwing the Nerves that govern the Stomach into Spasms, whilst the rest of the System remains as it were undisturbed ; unless perhaps in a commercial or secondary manner. Now as some Ideas seem constantly to affect certain Nerves, or *Plexus's* of Nerves, and not others ; is it not reasonable, on the other hand, to conclude, that any stimulating Cause, that pretty

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constantly rouses up certain particular Ideas, and but few others, does it only by vibrating chiefly some particular Nerves, or *Plexus's* of Nerves, and but few others?

14. MAY not, therefore, the strange Variety of Ravings, and Alienations of Mind, brought on by different poisonous Causes, each yet acting almost invariably in a way of its own, be owing to this same latent partial Tendency of each, to attack some one Portion of the nervous System, more directly and peculiarly than any other? And if so, must not such particular Organs, as are more immediately governed by those affected Nerves, be still likely to suffer on such Occasions, more than any others, that are not so directly under their Influence? In the *Hydrophobia*,

drophobia, as we find the *Throat*, *Oesophagus*, and *Stomach*, usually suffer more than any other Parts; may it not be presumed, that the Nerves that govern these Organs are more peculiarly fasten'd upon, and disturbed, by the Poison of a *mad Dog*, than any other Nerves or *Plexus's* of the whole nervous System? And may not the particular Terrors, and horrid Ideas, of *Dogs*, *Water*, *Drowning*, and the like, whilst the Patients are, in all other respects, sensible and humane, proceed from the particular spasmodic Ruffle these same Nerves are put into, whilst the rest suffer little or no Ruffle at all? And what they call the mad Point in *Maniacs*, who, on other Subjects, are very reasonable, and sometimes very knowing, and that for whole Years; does it not seem

seem to evince the Propriety of this Idea? Nay, is it not observed of almost all *foreign Agents* of any remarkable Vigour in the Constitution, that each seems to have some *latent peculiar Tendency* to affect certain Parts much more directly and sensibly, than others; and consequently to affect the Nerves influencing such Parts, and influenced by them, more directly and readily than others; as *Mercury* is apt to take to the Mouth, and salival Glands; the Fumes of Lead to affect the Bowels, and give Colics; the *Virus* of the Small-Pox to push at the Skin; that of the *other Pox*, to lay hold of the Nose, and Palate; *Cantbarides* to inflame the Neck of the Bladder; and so on of the rest?

§ 5. As to the obscure, and imperceptible Action of the Poison of a

mad Dog ; proceeding sometimes for Weeks, Months, or Years, before it exerts its last Malice, and forms an *evident* Distemper ; do not many other morbid Causes proceed in the same Way ; silently lurking amongst the Humours, and vitiating them for a considerable Time before they produce a *Fit of Sicknefs* ; or seem to hurt any one animal Function ; or even give the least previous Notice of any impending Danger ? May not the Reason of this be, that no Deviation or Degeneracy in the Fluids can sensibly affect the animal Oeconomy in any of its Functions, so as to produce Sicknefs, till that Deviation arrives at a Pitch capable of stimulating into Spasms, and Constrictions, the Nerves, and Solids, that influence some of the *nobler Viscera* ? And must not the Fluids arrive

arrive at a certain Pitch of Degeneracy, before they can produce such *Spasms*; unless it can be supposed, that their *least Deviation* is capable of doing it? If it is not; and that there are intermediate Degrees between their first Step of Deviation, and the Pitch that Degeneracy must afterwards arrive at, to be able to stimulate these governing Nerves into Spasms; does it not follow, that, before they can arrive at this *effective Pitch*, they must first, gradually pass through all the intermediate Degrees; and, consequently, take different Times for their Passage, according to the Efficacy, or Languor, of the Cause; the particular Turn of that Constitution; and various other Circumstances attending?

16. In some strong, foul, *Scorbutic Habits*, is not the whole Mass

of Humours in a growing State of Degencracy and Corruption, sometimes for Years, and the Owner feel nothing of the matter all the while; nor so much as believe any one that should tell him of it; but eats, drinks, sleeps, and can exercise all his Functions, as vigorously and well as ever; till, at length, a *Fever*, or a Fit of the *Gout*, or *Stone*, or some other Distemper, suddenly makes its Appearance; and now gives him to understand, his Affairs were not quite so well, as he had long before imagined them?

17. *Sydenham* has remarked, and Experience confirms it, that Persons, in all Appearance, both to themselves and others, perfectly well, have, all at once, fallen ill of *Putrid Fevers*; arising, no doubt, from a previous Delinquency of the Humours;

mours ; for can it be imagined, that what afterwards must cost the Animal Oeconomy so many Pangs and Struggles to concoct, separate, and get rid of, should proceed only from, or consist in, but the very Beginnings of a Degeneracy of the Fluids ? If *infinitesimal*, or *millesimal* Errors that way, could make us sick, should we ever be well ? Is it not, therefore, probable, the Cause of this *Putrid Fever* must have been at work, gradually changing and perverting the Fluids ; and perhaps silently nibbling among the coarser muscular Solids, in a smaller way of Spasmodics, for some time before the Person has any Feel of Disorder ; or any want of Ability ; and that he only finds himself in a *Fever*, or *Fit of Sickness*, just when the Nerves that govern some *eminent Viscera*, begin to be affected

affected with Spasms, whether obscure or apparent; and not before? Is not the first Notice, in these Cases, evidently *spasmodic*; witness the *Rigours* and *Horrors* they usually begin with? Do not spasmodic Affections accompany them, and make up no inconsiderable Part of the Distress, quite through all their different Stages? And what are the *Crises* that happily end those *Fevers*, but a sort of general Release from spasmodic Strictures; by which the Constitution is, at length, as it were, unchained, and set at Liberty to expel the now subdued Enemy, in various foul Evacuations; what it could not have done in the Course or Crudity of the Distemper, while the Spasms and Constrictions (of certain Portions at least) of the nervous System, yet subsisted? That *Spasms*,

either

either obscure or apparent, attend Fevers quite through their Progress, even those of the most inflammatory Character; as well as usher them in; and even afterwards, sometimes, keep a sort of Possession, when the Fever and Inflammations are over; seems evident from this, that in inflammatory Pleurifies, when, by sufficient Bleeding, Dilution, and other means, the Inflammation, and Fever are removed, yet the Stitch has sometimes continued near as pressing as ever, till a Dose of Opium, or the Application of a warm Poultice to the Side affected, suddenly took it off: And how could this have been, but by releasing the Stricture? Nay, are there not Fevers altogether spasmodic; as those from Worms, breeding Teeth, and the like? And, though many kinds of Spasms and spasmodic Affections sub-

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sist without either *Fever* or *Inflammation*; yet is it not probable, that *no Fever, Inflammation, or other acute Distemper, ever subsists without Spasms?* Even on chronical Occasions, do they not, sometimes, carry on a sort of underhand Dealings, when, and where they are the least apprehended? If so, may not the being aware of this *latent Complication* of spasmodic Affections with almost all Disorders, serve to unravel the Mystery of certain odd, unexpected, dangerous, puzzling, and otherwise inexplicable, sudden Appearances, that sometimes occur in many Distempers; as well as lead us towards obviating, in some measure, a great many of their bad Effects? An *Idea*, if I mistake not, of no trivial Consequence in Practice; though, perhaps, not attended to, either in Theory or Practice

Practice, quite so often, or so much, as it may deserve.

18. And as to the *Gout*; we may call it humoural, inflammatory, or what we please; but are not many of its common Appearances much in the nervous and spasmodic Stile? Its Freaks, and Flatulences, in the Stomach; sometimes suddenly vanishing, and as suddenly pinching elsewhere, upon no better Motives, perhaps, than the Patient's taking a good Dram; its almost instantaneous, and, as it were, whimsical Transitions, from one distant Part to another; its never bearing any Evacuations that ruffle; its often coming on after great Uneasiness of Mind; * its having been, sometimes, even frightened away all at once, when most teasing and troublesome; do

not all these heteroclite Dispositions (with others too many to enumerate here), seem to indicate a great deal of Vapour, Puff, and Spasm, in the Composition of this Blusterer?

19. WHERE is the constant Attendance, and Display of spasmodic Affections so little suspected, as in the Course of the Small-pox? And yet, from the first *evidently spasmodic* Onset of this Distemper, in Rigors, Horrors, Pains, and the like (that is, from its very Commencement), they hold on, more or less, in an obscure, clandestine, way, under various Appearances, to the very last. Is it not hence, that the daily Use of Opium, except, perhaps, for some time in the Beginning, enables so many to overcome this Distemper, who otherwise must inevitably perish?

perish? And the Returns of Exacerbation, especially in the Afternoons, and now-and-then between-whiles; what are they, but so many Effects of recurring latent Spasms; since Opium so happily takes them off; * which must be, by releasing the spasmodic Strictures that cause these Uneasinesses; and by setting the Constitution at Liberty, to make the salutary Push it is about? Whence also that useful Advance of the Swelling and Inflammation of the Face, so often observed in some bad Turns of the Small-pox, after a proper Dose of Opium; but from its taking off the Spasms and Strictures, that before had tied up the animal Oeconomy, and cramp'd its natural Endeavours; which, unless interrupted, or superseded, are ever employed in preserving itself, and in subduing, and expel-

ling any Enemy it may chance to harbour?

20. BUT to return to the latent, and sometimes long Workings of morbid Causes, before they produce their Distempers; let me add one Instance more; and that is, of the *inoculated Small pox*; a Distemper, that, in its *Manner* of being generated, exactly resembles the *Hydrophobia*; and, like that too, always sneaks on in the private Way of Corruption, for some time, before it breaks out into open Hostility. The *Times* indeed of their concealed Doings may be different; but that Difference, whether of a Week, or a Year, makes none in the general Nature of their several Causes.

21. SUPPOSE a healthy Person inoculated with the *Small-pox*. He continues as well as ever, for six, or eight Days after: Then, all at once, he shall have *Rigors*, and *Horrors*, and *Pains*, and a *Fever*, and *Heat*, and *Thirst*, and a *Turn at Stomach*, and a *Head-ach*, and so forth; in short, he shall find himself very sick; what he had not been the Day before; nor any other Day, since he was poisoned. The Poison was there all along; and, to be sure, not idle: Why then did he not grow sick, earlier? Must it not probably have been, that the Poison could not, under just so many Days, work up the induced Degeneracy of the Fluids, or perhaps the growing *Spasmi* of the *coarser* muscular Solids, or both, to a *Pitch* sufficient for reaching, and bringing into *more evident* Emotions, and
spa-

spasmodic Strictures, the Nerves that govern some of the *nobler Viscera*? And does it not seem to follow, that, until the *Nerves* and *Solids* governing such *Viscera* come to be *spasmodically* affected; which, it seems, every kind of Vice in the *Fluids* cannot; and only certain Kinds and Degrees of each, can do; there shall be no Perception of *Sickness*, or *Lese-function* in the animal Oeconomy? Of which more in another Place.

22. IF all *morbid Causes* exert their Influences, not absolutely, but in a manner wholly relative to the Subjects they work in; if *Dogs* have amongst them a great Diversity of original, as well as accidental, and adventitious Temperaments, like *Men*; must not that, together with many different Circumstances relating to the

the Manner of their own being affected, cause an almost infinite Variety in the Degrees of Virulence, or Remissness, tho' none in the *specific* Nature of the Poison they emit? And if every Difference in the Temperaments of the human, and canine bodies concerned; with the many other concomitant Circumstances of both, shall occasion a Difference in the Violence or Remissness of the *Poison*, on one hand; and in the Disposition to be more or less affected by it, on the other; is it not probable, that, whilst this Poison may affect some Persons in the *highest possible Degree*; it may affect others in the *lowest*; and others, perhaps, *not at all*? Like the *venereal Virus*; which, in some Habits, is most active, and cruel; in others, it gives no mighty matter of Trouble; while some again have

have travelled the same Road of Infection without finding any, which others have gone, who both found and felt it in the severest Manner.

And the *Small-pox*; does it not proceed with a sort of pestilential Malignity in some Constitutions; and prove gentle, and benign in others; whilst there are, with whom it will not so much as take, even by Incision? Thus, from the *highest* to the *lowest* possible Degrees of Infection; and from the *greatest* to the *least* possible Disposition to be infected; how great must not the Variety be, of the Rage, or Remissness of the Effects of *virulent Causes* thro' all their intermediate Stages, and almost numberless Combinations, between these Extremes?

23. DOES it not therefore seem a little doubtful how far some boasted Prophylactics may have been really concerned in, or what Measure of Credit may be really due to them for all the celebrated Preventions so confidently placed to their Account? Is it not probable, of Numbers who were bit by mad Dogs, and are said to have been preserved by some of these; that several may have escaped rather by virtue of a happy Turn of Constitution, and other favourable Circumstances, than because they happened to make use of such or such an unmeaning Remedy? I should not wish to be understood here as if I aimed at derogating from the just Value of Remedies that are qualified to answer any rational Indication of Cure. Such Preservatives have been tried; and, I believe, with Success;

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but

but it was mostly, in a hit-or-miss *
 * empirical sort of way, without any
settled Indications to guide the Pre-
 scriber in what he was about. But
 the last dreadful Effort of this Poison,
 the *Hydrophobia*; when it once came
 to that pass, all was Hurry and Con-
 fusion. No regular Method of Practice
 was followed, because no rational In-
 dication of Cure was formed: The
 greatest Men were at a loss here;
 and all they ever produced towards
 the Cure, was little better than a per-
 plexed Huddle of odd, desperate, and
 sometimes contradictory Effays, pre-
 cipitately hazarded in an Exigence,
 that, from the Moment it first ap-
 peared, entirely banished every Hope
 of succeeding. Even with the justest
Indications of Cure, there may be great
 Difficulty in Practice; but without
 any at all, there is always utter Dark-
 ness.

ness. However, in spite of Difficulty, if we can once find Indications for Cure, 'tis ten to one we shall afterwards find Remedies to effect it.

24. FROM the foregoing Case, Queries, and Instances, does it not seem probable, that an *Inflammation* makes no original, or *essential* Part of an *Hydrophobia*; and that an *Hydrophobia* just begun, and for some time after, be it more or less, whatever *inflammatory Appearances* it may put on, is a *Distemper* in its own Nature, not at all *inflammatory*, but simply *spasmodic*; like *Hysterics*, and *Worms*, that in their ordinary Effects are confessedly *spasmodic*; and sometimes will mimic all possible Disorders; even the highest Degrees of an *Inflammation*? And tho' general Maxims in Practice are seldom to be founded

on any one Instance or Experiment only ; yet is one Instance as good as a thousand, to shew whether an *Inflammation* be *essential* to an *Hydrophobia* ; if, as was said before, Disorders cannot subsist without their *Essentials*, and that the Patient, now under Consideration, most certainly had an *Hydrophobia* without an *Inflammation*.

25. DOES it not also seem probable that the *Hydrophobia*, like the *Tarantism*, is a Species of *Mania*, attended, as the other is, with certain Alienations of Mind, and certain Disorders of Body, peculiar to itself ; and all, proceeding from irregular Spasms, and spasmodic Constrictions of some particular Parts of the nervous System, as from their *immediate Cause* ? And is it not as probable, that all maniacal Alienations of Mind,
with

with all their own specific concomitant Disorders of Body, are *immediately* educible from the same spasmodic Cause, let the Cause of that Cause be what it will?

26. IF the *immediate* Cause therefore, of the *Hydrophobia*, consists in nervous Agitations, and spasmodic Strictures; and that the animal Oeconomy, having so many of its most necessary Operations now perverted, must be working its own Destruction; should not our first Aim be levelled at quieting these Agitations, and releasing these Strictures? My Reasons for considering the Spasms, without taking notice of their Cause, shall be given in another Place; where, it is possible, it may appear not unlikely, at least with respect to ingrafted Poisons, that whatever shall

shall release the Spasms, shall, at the same time, also remove their Cause : And where I spoke of evaporating the Poison, and working off virulent *Effluvia* ; I only meant such virulent *Effluvia* as are cast off by the Solids, and mix with the Humours during the very Paroxysms of these Disorders.

27. THIS Distemper is so acute, and, for the most part, dispatches its Affair so quickly, there is no Time to be lost. The *Spasms* must be allayed soon ; at least their Violence must ; or they bring on an *Inflammation* ; and if that once happens, the Case that at first was very difficult, now becomes, in all Probability, deplorable ; for, the first Spasms, and the new Inflammation, play a new Game of Mischief into one another's Hands.

Hands. The Inflammation, tho' itself but an *Effect*, now becomes a *Cause*, acting in Concert with the first; and multiplying new Symptoms, and Dangers, perhaps beyond all Hope of Remedy. The *antiphlogistic* Method, so generally necessary in the Cure of inflammatory Fevers, is here of no Use; it is often rather hurtful in the spasmodic Part of this Disorder; and the *antispasmodic* again, is mostly too heating in the inflammatory Part: Not to add, that plentiful Dilution, without which inflammatory Fevers cannot well be subdued, is here impracticable; since the Patient, so far from being able to drink plentifully, cannot so much as drink at all.

28. IN all Cases where an Inflammation is threatened, particularly
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in all violent spasmodic Distresses, is not Bleeding adviseable, and even, sometimes, a prudent Repetition of it, if the Patient's Strength and Habit of Body can afford it. And if Bleeding is at all necessary, should it not be our first Attempt on so head long an Occasion as the *Hydrophobia*, where, generally speaking, there is either a real, or a spurious Plethora; either too great a Fulness of the Humours, that elbows out their containing Vessels, and over-distends them out of their *natural* Tone and Play; or without any Excess of Quantity in the Fluids, the Pressure and Difficulty will be nearly the same, if their containing Vessels are thrown into convulsive Strictures that cramp them inwards, so as to confine the Fluids within narrower Channels than it is natural for them to move in.

Either

Either way, the Circulation must labour, and the animal Oeconomy suffer; and *Bleeding* seems indicated in both; but with this material Difference, that, in the first, where the Quantity is supposed to exceed, the *Bleeding* should be proportionably large; but in the latter, where there is no such Excess, and the Fluids only want sufficient Room to flow in their now contracted Vessels, that Evacuation ought to be proportionably moderate; just what may serve to ease the Remainder, and no more: In a Plethory too, from mere Rarefaction, our Bleedings must be more sparing too.

29. AFTER all, may not there be Constitutions so low, languid, and cold, as shall scarce admit of bleeding at all, unless some inflammatory

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Accident should manifestly require it? And would it not be a pernicious Error to bleed such Persons *largely*, in the first Hours, perhaps, of an *Hydrophobia*, upon an unfortunate Presumption of its being not only *always* an *inflammatory Distemper*; but *always* so, in the most *acute* Sense; that, in which Inflammations of the larger Membranes must *ever* be considered? In spasmodic Cases of such a *Genius*, must not Bleeding be much more likely to hasten the Death, than forward the Cure, of a Patient? The learned and ingenious Dr. *Hoadly* once told me of a Woman he had seen, who, some Days after she had been bit by a *mad Dog*, died away, in all Appearance, of mere Weakness and Languor: But Instances of this Kind so very seldom occur, they ought to be look'd upon rather

rather as Exceptions to a general Rule, than as a Rule themselves to proceed by, in our Endeavours for others : However, some Caution in this Article of Bleeding in spasmodic Cases is the more necessary, as they so frequently exhibit Appearances that seem highly inflammatory, where yet there may be no Inflammation : Witness the *Fevers, Heats, Thirst, Ravings, Stitches*, and other alarming and equivocal Symptoms often caused by *Worms, breeding Teeth*, and such-like stimulating constrictive Causes ? The State of the Tongue seems for the most part to be our truest Monitor either of the Presence, or Absence of an Inflammation, on most of these Occasions.

30. AFTER sufficient Bleeding, should not our Calmers, and Anti-

spasmodics immediately take place, in larger Doses to be occasionally repeated according to the Exigence, and to the Effects we still find what was already given, or done, may have produced? And for the *Medicines*, is it not an Affair of common Prudence, in general, to prefer *Musk*, the two *Cinnabars*, and *Opium*; they having, from just Indications, so happily acquitted themselves on a like Occasion already? or, *Opium*, *Musk*, *Asa-fetida*, and *Campfire*; as the *Musk*, *Asa-fetida*, and *Campfire*, so speedily relieved this Patient, when her Disorder and Spasms were renewed by seeing the Person who had frightened her, ride along at a Distance; Spasms, that in every Appearance were like the first virulent ones; but that they were not attended with the *Dread of Water*; though very probably,

bably, on the Renewal, they were but *mere Hysterics*, as a Disposition to be spasmodically affected from almost any Shock, or other ordinary Cause, might have remained perhaps long after in such Parts of the nervous System as had been most agitated and weakened before; and had not, as yet, quite recovered their Tone.

31. THE Medicines now mostly taken, and by Experience found of most general Efficacy in spasmodic Disorders, are, *Opium, Musk, Asa-fetida, Camphire, Wild Valerian, Jesuits Bark, Castor, Mistletoe, Snake-root, Rue, Garlick, the Fetid Gums, Salt of Ember, Salt of Vipers, the other *volatile Salts and Spirits, Amber in Substance, Earth-worms, Peony Roots, Pulvis de Gutteta, the two *Cin-*
nabars,**

nabars, and many more : And may not some Constitutions, and Cases occur, where almost any thing shall accidentally release Spasms?

32. As to *Opium*; ought that known Composer both of the Mind and Body, to be ever omitted in a Disorder where both are so eminently agitated, and distressed? It allays the Spasms, and therefore composes the Mind. Is it not likewise well worth remarking, that of the few upon Record who have survived this Calamity, it will appear that *Opium*, in one Shape or other, was given to most of them? Nevertheless, as human Nature produces so great a Variety of Temperaments, each attended with *Idiosyncrasies*, or certain complexional Peculiarities which make those Constitutions, as it were, whimsically

sically disaffected to some Medicines that are often found serviceable to others in like Cases; is it not therefore necessary to make Inquiries; and not insist either on *Musk*, *Opium*, *Asa-fetida*, *Camphire*, or any other particular, or supposed, *Specific*; but among the Antispasmodics, to recommend such as may be most likely to agree with each particular Constitution; an Eye still had to its past Dispositions?

33. WITH regard to *Musk*; is not its great Value, when given in sufficient Doses, now pretty generally allowed in several spasmodic Disorders? Though, for the *two Cinna-bars*; I confess I am far from being able to determine what Part they really had in the Cure now before us. They are Allayers of Spasms in
verminous

verminous Cases ; but that, I suppose, arises from their destroying or dislodging the *Worms* ; or perhaps from their helping to dissolve, and loosen that clinging, stale, putrid *Mucus* those Creatures usually nestle in ; which kind of *Mucus*, sometimes without *Worms*, shall raise all the troublesome Symptoms that *Worms* or almost any other Cause can possibly excite. The Cinnabars, like the Ethiops mineral, no doubt possess some good Qualities ; but what they contributed in our Case, I cannot say ; I only propose, whether they ought not to be retained still along with the *Musk*, and *Opium* ; since we can never be sure *à priori*, from the Genius, or common Actions of any Medicine, either simple, or compound, what Effects it shall really have when compounded with others :

'Tis

'Tis Experience must always decide that ; besides, as we see virulent Causes have each their latent Tendency to attack certain Parts, as it were preferably to others ; may we not suppose the Antidotes have each their partial Tendency as well ? And here, we have experienced what the whole Composition of the *Musk* and *Cinnabars* could do. This Medicine was first brought into *Europe* from the *East-Indies* by Sir *George Cobb*, Bart. ; to whose Humanity in publishing it, the World is indebted for one of the noblest Hints it ever received, in one of the most calamitous of all the Accidents human Nature is liable to.

34. ALTHO' the Sickneſs at *Stomach*, as well as ſome other Ails attending

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tending this horrid Disorder, seem not to be so much the immediate Affections of the Parts themselves, as spasmodic Sufferings from a remoter nervous Connexion; still the Sufferings from this Consent soon pervert the natural Functions of the Parts thus affected; and the *Stomach*, on all these Occasions, partaking more than most other Parts, it soon breeds a great deal of heavy, loathsome *Phlegm*: The whole Tract of the Intestines must take Share of the Evil too, though in a lesser Degree: However, as to the Affair of Vomits, considering these Stomach-Disorders are not original, or *idiopathic*, does it not seem right to decline the giving *Vomits* in an *Hydrophobia*, unless a constant Reaching, and Discharge, shew it may be
abso-

absolutely necessary to wash the Stomach a little ; and if so, ought it not rather to be with some agreeable softer Liquor, than any thing that should nauseate, and irritate ; or throw a Part already but too much distressed with Spasms, into yet more Spasms, and Distress ? Whence are the dangerous, and sometimes fatal Effects of drinking cold Water, or taking a Vomit, immediately upon a violent Fit of Anger ; but from an Addition of Spasms they bring upon a Part that is agitated already ; as the *Stomach* very often is, when the *Mind* is greatly, and suddenly moved ? For this Reason, I think the *Turpeth Vomit*, I intended for my Patient in case her Stomach had continued so much disorder'd, that she could not have taken her Medicines, was ill judged. I was pleased she had not taken it ;

and still better pleased, that the Occasion for taking it, ceased; but what indeed may serve, in some small measure, to excuse this Step, as well as that of the *antimonial Clyster*, a Medicine, in its own way, equally irritating and improper, was the large Course of *Opium* she was in at that Time, which I supposed, would have made such *Stimuli* but necessary to produce even the *ordinary* Effects. But I am now satisfied gentler Measures would have been more of a piece with the main Indications of Cure; and I take this Opportunity of publishing it, by way of Caution to others, that, if they please, they may avoid slipping perhaps into the same Error themselves.

35. As to Purges in this Case,
Do there seem to be any Indications
for

for them? The first Effect of purging Medicines is, in some Degree, to irritate the Stomach; and ought not that to be as little stimulated as possible amid so general a Confusion; since, of the whole animal Oeconomy, there is scarce a Part has so many great Connexions, or so great a Variety of remarkable Influences?

36. THE lower Parts of the intestinal Tract, as was already hinted, partaking of the common Evil, tho' in a lesser Degree, may be apt to prove either too quick, or too slow on these Occasions. Being too slow, was the Condition of *Elizabeth Bryant*; and may possibly be that of most other Persons under the Influence of virulent Spasms; except when Poisons are taken into the Stomach; or that the *partial Disposition*

position of the virulent Cause, or Agent may happen to tend more directly to the Intestines; as in Tobacco; which, though it is not accounted a Poison, yet seems in many respects to proceed very like one:

When People first try it, let it be in what Dress it will, they for the most part find themselves quickly seized with a *Dizziness*, and *Sickness*; with *Languors*, *cold Sweats*, and the like common Symptoms of a *spasmodic Ruffle* in the *Primæ Viæ*, which usually go off with a Stool, and sometimes by Vomiting; nay, applied to any Part of the Skin, its Effects, in some, have shot directly to the Intestines, and produced a Sort of Agony consisting of the above Symptoms. In the Hydrophobia, if the Constitution proves too remiss, and the Intestines seem to neglect their

Office,

Office, should not *Clysters* be sometimes used, at reasonable Distances, to help Nature, and relieve the Patient? and only such, as may just answer, and be at the same time as little stimulating as possible? For *Clysters* have been sometimes found to produce very undesirable, troublesome Effects, in some spasmodic Cases; particularly in some kinds of *hysteric* Affections; which may be a Reason, why they ought to be somewhat the more cautiously advised in the *Hydrophobia*.

37. WHAT Effects *Blistering* may have, I know not. Perhaps it may have good ones in certain languid, depressed Cases, when seldom they happen; but, in all that assume a more explicit and violent Character, are they not to be suspected? What-

ever little, the Discharge of Serum, and what comes after, may contribute (and very little that can be), may not the first Action of Blistering-Plaisters be too stimulating, where so many strong Spasms and Strictures are on Foot already ?

38. WITH regard to *diaphoretic*, and *diuretic* Intentions ; is it not observed, in almost all spasmodic Disorders, that *Sweating* is the Discharge unassisted Nature seems most inclined to procure, for the Relief of the Distressed ? What so happily assists in the Release of Spasms, or so frequently denotes their Release, as gentle Sweating ? There are agonizing, *symptomatic* Sweats, that are, as it were, squeezed out by dint of Oppression and Distress ; but the *critical* are produced by the kindly Workings of
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of an animal Oeconomy relieving itself, and overcoming the morbid Cause of its Oppression: The first is always a Symptom of Danger; the latter, a Sign of Amendment; and a *Vehicle*, in which the Constitution disincumbers itself at a Million of Outlets. Doctor *Mead* observes, that Sweating has been often experienced to cure in the Bite of a *Viper*; and what cures the *Tarantism*, but Sweats produced by dancing? Nay, are not our principal *Antispasmodics*, for the most part, remarkably diaphoretic? The other Discharges, no doubt, serve in their Turn, sometimes: In some Colics, the morbid Stimulus acting in the *Primæ Viæ*, solicits an Evacuation of their Contents, as the Outlet nearest at hand, and most convenient, the Cause usually lying there, or

thereabouts; but when the Spasms proceed in Parts far removed from these Outlets, in some of the inmost Recesses of the animal Oeconomy (as in virulent Cases, not confined to the *Primæ Viæ*, they always do); are not Perspiration and Sweating the most likely, as indeed they are the most usual, Methods of Nature to release them by? And must it not be rather from Accident, than constitutional Choice, that Nature, in these deeper Cases, ever uses any other Means? Some of the slower, and less active Kinds of morbid Causes in the Fluids, have been wrought off by the urinary Passages; and sometimes perhaps some of the more volatile; but is not this a particular, confined, and coarse Secretion, when compared with that by the *cutaneous Outlets*? And its Supplies,

are they not chiefly from one smaller Quarter only of the animal Oeconomy, the *emulgent Arteries*; whilst the cutaneous Supplies are incessantly administred from the greatest Part of the whole arterial System almost all at once? The Insufficiency of the grosser Discharges, when morbid Causes have got Footing in the Habit, has not escaped the Penetration of *Sydenham*, who distinguishes between the two Kinds of these critical Evacuations; and calls the coarser *per Fæces*, the finer *per Flores*. It is true, Sweating is no natural Evacuation: It is always a forced Affair one way or other. Whilst every thing holds as it ought to be, the animal Oeconomy does not want it; and it must ever be some Degree of Oppression, something that is not altogether right, that causes it:

But then it seems contrived for a Succedaneum to all the others: It is their faithful, tho' alien, Handmaid; ever in the Way, and ever ready to answer their several Occasions, and supply their various Defaults; which, whenever it fails to effect, these Defaults, in most Constitutions, soon amount to a Fit of Sickness: And this is probably the Reason why, in some hotter Climates, People no sooner find the Disposition to Sweating cease, than they find the Disposition to Health cease along with it.

39. As to such Plungings into cold Water, as have been so strenuously advised, and so often practised in the Hydrophobia; I have only to inquire, whether, upon a Supposition of its being an inflammatory Distemper, as the Notion almost universally runs;

runs ; and not only so, but that its Inflammations, and the Fever that attends them, must be of the most acute, and precipitate Character, as the Inflammations of larger Membranes, such as those investing the *Fauces, Throat, Oesophagus, and Stomach*, always are : Whether, upon an Assurance of the Presence of any such *Inflammations, or inflammatory Fevers*, the *cold Bath* was ever yet practised, or so much as proposed, except in this unfortunate Case of the *Hydrophobia* alone ? Was it ever advised in the Progress, and Distress of an inflammatory *Quinsy* ? or in those of a violent *Pleurisy* ? or *Hepatitis* ? or in a *Nephretic* Inflammation ? in one either of the *Stomach, or Bladder* ? or, in that of any other more delicate, or necessary Organ of the whole animal Oeconomy ? If

not

not; and that in these several Inflammations, the cold Bath ought to be religiously avoided, as a Step the likeliest imaginable, either to destroy the Patient in the very Operation, or to fix his Distemper beyond every Possibility of Redress; is it not with equal Reason to be avoided, and abhorred in just the same Kinds of Inflammations supposed to attend the *Hydrophobia*? And the additional Frights, and Threatenings, which ought, they say, to accompany these cold Immersions; what is that, but to multiply Terrors in order to cure them? For are not these very Terrors a main Part, nay the *chief characteristic Symptom* of this maniacal Disorder?

to 40. AGAIN, if we suppose it purely spasmodic; and the Symptoms

[III]

toms, as they always are, very great and pressing; what are we to expect from cold Bathing? Are not the first Effects of being dipped in cold Water, spasmodic? a sort of universal Constriction? And may not that, in Addition to the other strong ones now already at work, cause one general Spasm never to be released; and fling the unhappy Patient into his last Convulsions? Is cold Bathing proper in the Article, and Agony of a strong *Hysteric Fit*? Might it not, in the Height of such a *Paroxysm*, do irreparable Mischief? What better then can be hoped from it in that dreadful spasmodic Paroxysm of the *Hydrophobia*?

41. BESIDES, is not this Disorder evidently *maniacal*? and has not every maniacal Person, what they *
call,

* call, *his mad Point* ? Some Idea, some Subject, which, whenever it is touch'd upon, *always* gives him great Disturbance, and always enrages the Distemper ? In order to the Cure of such Maniacs, ought not that *Point* to be nicely avoided ; since the oftener they are agitated that way, the deeper will the wrong Impression still be made ; and the harder it must be to cure them ? In the *Hydrophobia*, is not *Water*, let what will excite the Idea, and the unreasonable Aversions, and vain Terrors it creates, the *main Point* their Madness chiefly turns upon ? Are not our *Water-dippings*, therefore, a sort of Medicine, which, instead of ever allaying, must constantly aggravate the Distemper in its *very Essence*, by rousing up all its horrid Symptoms afresh, as often as it is, either used, or even
so

so much as named? So that, if any were ever cured of an *Hydrophobia*, by cold Bathing, or any other Water Trials, as has been pretended, it was an Escape, rather than a Cure; and must have been by Accident; as a Man was cured of his Lameness by falling from the Top of an House.

Thus, take the *Hydrophobia* in whatever Light you please; whether for inflammatory, or spasmodic; for a Madness, or a mixt Distemper; it has ever been its Fate, to be treated in a manner not only inconsistent with its own Genius, but differently from what any other Distemper under the same reputed Circumstances ever yet was; such is the Perplexity a Want of *true Indications of Cure* always creates, whenever a Disorder happens to be unluckily connected with this Misfortune. Upon

the Whole ; is it not highly probable, that neither *Bleeding*, nor *Vomiting*, nor *Purging*, nor *Clysters*, nor *Vesicatories*, are to be practised in the Cure of an *Hydrophobia*, otherwise than *pro re nata* ; with a perpetual Exclusion still, of all Attempts of curing it by Water ; at least in any of the Methods that have as yet been ever recommended to the World ?

42. Now as to *Prophylactics*, or Means of preventing the *Hydrophobia*, in such as are bitten by mad Dogs ; it has been already observed, that, notwithstanding the great Variety of Symptoms caused by various Poisons ; there is still a remarkable Analogy between their general Manner of acting, and proceeding, in the human Body : Here we have only to do with such as are received into
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some fleshy Part, either by Application, Puncture, or Incision; particularly with that of the Bite of a mad Dog. Thus are the Poisons of the Viper, and Tarantula, usually received. Thus the Virus of the inoculated Small-pox; and that also of the Great-pox, when taken in the common Way: all are communicated pretty nearly alike; and all, most certainly go to work the Moment they are communicated; but their first Workings, probably as being weaker, and exercised only in lesser Spasms, or Spasmi among the muscular, and fleshy Parts, cause no Sickness, or Læse-function in the animal Oeconomy*. Do not smaller Mortifications that begin at the Extremities, or among the outward Muscles, usually proceed in somewhat a

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* See Qu. 21.

like Manner, without Trouble, or Sickneſs to the Patient, for ſome time, even for Days, before their Malice is propagated to Organs of more Eminence; which no ſooner happens, than Sickneſs, and Danger preſently enſue? And do not all theſe virulent Cauſes that take their Riſe among external, coarſe, and fleſhy Parts, take their different Times, each according to its own Genius, of pioneering in an obſcure, inſenſible, and ſeemingly harmleſs Manner in the Habit, before they come to ſpring their ſeveral Mines, and openly declare themſelves the formidable Enemies they really are? The Virus of the inoculated Small-pox we have already traced a little, in the Courſe of its firſt private Operations; and they take up ſome Days before the Perſon inoculated finds

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him-

himself in the least affected, or sick.*

The venereal Virus has its own Time of weaker, and unfelt Action, too.

That of the *mad Dog* lurks to all Appearance altogether innoxious for Weeks, Months, or Years; although it is not *quite* idle for a single Moment of the whole Time. Those of

the *Viper*, and *Tarantula* are quicker; but still, like the others, they have

each their own Times of smaller insensible Proceeding, and Piddling,

before they come to open Action; and although these Times were to be

computed but by Half-hours, or Half-minutes, as was hinted in another

Place, yet the general Analogy in their Manner of operating holds just

the same: Even in that of the *Rattle-snake*, which is said to kill sometimes

* in less than half a Minute, we may, *

notwithstanding its Rapidity, conceive a similar Difference between its *first*, and *last* Effects in the Body that receives it. Now since it is only during this first, underhand, weaker Action of these several virulent Causes, that *prophylactic*, or preservative Remedies can find Place; let us see what *Prophylactics* have answered after the Punctures of other poisonous Animals; and how they have answered; and that, possibly may lead us to Methods of equal Efficacy to prevent an *Hydrophobia* after the Bite of a mad Dog.

43. FROM what hath been elsewhere remarked, is it not probable that the great Difference between the first obscure, insensible Action of all inoculated Poisons, whilst as yet People find themselves well; and their
last

last more evident, and sensible Exertions when People find themselves sick, and in Danger, may consist only in this ; that, whilst these morbid Causes, particularly such as are virulent, continue to nibble only amongst the coarser Fibres, and Filaments of the *Membrana cellulosa*, where they are first inserted ; the stimulating Action of the Virus, as yet weaker, and more confined, produces but smaller, insensible Strictures, and Spasmi, among those coarser Solids ; and so continues to proceed, as it were, silently, and unfelt, until it causes Swellings, Inflammations, and Pain, tho' as yet no Sickness, or immediate Danger, until gradually propagating, it comes to advance so far as, at length, to reach some of the nobler Organs, that are more immediately subservient

ent to Health and Life ; or rather, comes to affect such Parts of the nervous System as *immediately* govern these *nobler Organs* (which, pretty nearly, seems to be the Case too, and Manner of Procedure, in the little creeping *Mortifications* before taken Notice of); that then, and not before, the Face of Affairs begins to change : What were but *unaffecting*, and sometimes *insensible Spasmi* in the Flesh, become *evident*, and *dangerous Spasms*, among the nobler *Viscera* ; the Symptoms now multiply ; the Patient finds himself sick ; and the Distemper becomes explicit, and alarming : Nay, is it not probable, whatever the Condition of the Fluids may be, that there cannot be so much as a *Feel* of Uneasiness in the whole animal Oeconomy, until the Solids come either to be over-distended,

tended, or spasmodically affected? Is it not also probable, that they may in some Parts of the Body be affected with Spasms, and not cause the least Pain? And, that to produce *Sickness*, some of the Nerves governing one or more of the *nobler Organs*, must be first thrown into Spasms?

44. THERE are certain Oils, such as those of *Scorpions*, and *Vipers*, that are held to be specific in the venomous Punctures of these Animals: But is it not probable that the Virtue these Oils chiefly do this Service by, consists not in any peculiar, or specific Quality they possess, as belonging to this or that Animal; but in their being soft, unctuous, relaxing Substances; and therefore likely to soothe, and release such little construc-

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almost
cable!
tive Spasmodi as begin to be excited
at the Parts bitten; and are now at
Work, and making their Way along
the *Membrana cellulosa*? If so; may
not this early Soothing and Release
of them, *for ever* hinder any far-
ther Propagation of the Evil to
other more sensible, and essential Or-
gans, of which, the Spasms, as was
before observed, are always more di-
stinct, violent, and conclusive?

45. A Person, for Instance, is bit
on the Hand by an enraged Viper:
This is a coarse muscular Part, and
not *immediately* subservient to Life:
That Hand, after a while, begins to
swell; and the Swelling is gradually
communicated to the whole Arm.
These are but ordinary muscular
Parts still; and the Person bit, tho' he

he may feel some Pain in that Hand, and Arm, nevertheless finds no real constitutional Ail, Sicknefs, or Loss of Strength. Hitherto, and perhaps for some time after, the Use of one or other of these *Oils* shall effectually put a Stop to the Evil, and it shall never proceed further. But supposing no Oil used: As soon as the Hand, and Arm shall have swelled to a certain Degree, the Patient begins to be faint: Now, it seems, the Effects of the Poison have crept so far as just to touch upon some Parts of the nervous System that govern the Operation of certain Organs, which, both to Health, and Life, are of much more Importance in the animal Oeconomy, than the Hand, and Arm, or than the Parts of the nervous System that govern the natural

Motions of either ; for it has been remarked before, that some Parts of the nervous System may be affected without affecting the rest : As yet Things seem to go on somewhat calmly, and without any manifest Appearance of Spasms, or Danger ; and the Oils, as yet, may do Service ; but soon after this, our Invalid finds a *great Sickness at Stomach* ; he has bilious *convulsive Vomitings*, and *cold Sweats* ; and sometimes, as Dr. Mead * observes, *Pains about the Navel* ; and * if the Cure is not speedily effected, *he dies*. Thus, has this Prospect been clearing up at every Step, from the lowest Degree of the first obscure, and almost imperceptible spasmodic constrictive Emotions, as it were creeping, and concealed among the Muscles, to their last more violent,

lent, and more evident spasmodic Efforts among the nobler Organs. But though such latent Spasms as happen confined to the muscular and fleshy Parts do not *immediately* bring on either Sickness, or Danger; yet they seem very well qualified to distress that Branch of the Circulation they work in, so as to produce Swellings, Inflammations, &c.

46. WITH regard to the Swelling of the Hand, and Arm, that ensues upon this Bite; let us see, how it arises; how it proceeds; how far the Fluids are concerned; and how far the Solids? In these abstruse Cases, it is only by observing the Distemper in its first Seat, or Cradle; and by endeavouring to pursue it afterwards, with an Eye to its Movements,

ments, Stages, Acquisitions, and Events, that we can be able to form a just Idea of its Nature ; or discover fit Expedients for suppressing its Effects. This venomous Swelling then, must undoubtedly arise from some new, sudden Restraint put on the Circulation at the Part bitten : This Restraint, must it not proceed from some new Failure, induced either in the Fluids, or Solids, or both ? The Fluids, it is true, are invenom'd at that Spot ; but does that make them thicker, fizier, or less capable of being freely propelled along their several Vessels than they were just before ? Is not the Notion of their sudden Coagulation from poisonous Causes, now a good deal laid aside, and justly ? If therefore the Fluids are as fit for Propulsion, and Circulation, as they were before the Puncture ;

ture ; what can suddenly restrain the Circulation here, but some new morbid Affection impressed on the Solids by the virulent Stimulus? And how can that Stimulus effect it, but by irritating the finer nervous Filaments at the Part, out of their own natural, calm Tenor of Oscillation, into preternatural, unequal Emotions, and spasmodic Strictures? Is it not thus, that Stimuli of all kinds bring on Obstructions, Swellings, and Inflammations ; the irritated Capillaries, and containing Vessels are so tightly drawn in, and cramped, at some Parts, that the Fluids cannot freely pass along, as they did before ; whilst of the same Vessels, the Portions that lie next before, are too much distended, often beyond their natural Capacity ; as every distractile Tube, the more forcibly

cibly it is stretched out in one Part, the narrower will it be shrunk in at another ; and though it is said, that Stimuli always bring a greater Flow of Humours to the Parts they act in ; yet the Swelling, and Inflammation of the Arm that ensue upon receiving the Puncture of a Viper, are they not rather produced, because the spasmodic little Strictures of the capillary Vessels will not suffer what is sent thither in the natural Course of Circulation, to pass off as fast as it comes on ; so that the retained Difference must still gradually accumulate to a Swelling ?

47. T H U S we see how the poison'd Stimulus has drawn the Nerves, and Solids into little morbid Vibrations, and convulsive Strictures, at the invenom'd Spot : But how these dif-

disorderly Vibrations, and Strictures are kept up afterwards, and propagated so deliberately, and regularly; first among the Parts all round that Spot, and thence to the most interesting Parts of the animal Oeconomy, is an Article worth considering. Some time then, after the Bite, a small Swelling appears: This Swelling increases by little and little; and the Solids are gradually distended: when this Distention arrives at a certain Degree, an Inflammation begins; and the Swelling, with its new Accessory the Inflammation, proceeds to augment, and gain Ground, till they come, at last, to take Possession of the whole Arm, with a Part of the Neck, Breast, and Back; and all this, very regularly, and without Deviation, just in the Order of the immediate Contiguity of these Parts,

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from

from the first Point of Infection, to the uttermost Limits of the pectoral Muscle. As hath been already observed, no new Unfitness for Propulsion in the Fluids is superinduced by the Poison received. That the Blood is never the Part immediately concerned in these virulent Cases, is now pretty generally allowed; and better Reasons for the Allowance cannot be given than those we have from Dr. Mead, when he says *, “ I was of Opinion when
 “ I first wrote these Essays, that the
 “ Effects of Poisons, especially those
 “ from venomous Animals, might be
 “ accounted for, by their affecting
 “ the Blood only : But the Consideration of the Suddenness of their
 “ Mischief, too quick to be brought

* Mech. Account of Poisons ; Introd. p. 40.
 Ed. 1747.

“ about in the Course of Circula-
 “ tion (for the Bite of a Rattle-snake
 “ killed a Dog in less than a Quar-
 “ ter of a Minute), together with the
 “ Nature of the Symptoms *intirely*
 “ *nervous*, induced me to change
 “ my Opinion”. These Confide-
 rations are just ; and seem to make
 it more than probable, that the un-
 toward Symptoms brought on by
 poisonous Agents can never be pro-
 duced by their affecting the Blood :
 But as these Cases are *intirely ner-*
vous, and that the animal Spirits are
 the Fluid thought to be chiefly con-
 cerned in nervous Affections, let us
 see, from what we can guess of the
 Nature of these Spirits, and what
 we know of the Effects of virulent
 Causes, how far the Properties of the
 one may serve to account for the
 Procedure of the other.

48. THE Nerves, and nervous Filaments and Solids, are agitated by poisonous Causes. This has been observed already: But these little convulsive Agitations *first* excited by the Poison of a Viper just at the Part bitten (I speak here, of the Hand); do they not *afterwards*, for some Minutes at least, prove a little too deliberate, and regular in their Progress, to be supposed the immediate Effects of *poisoned*, or *enraged animal Spirits*? The Swelling, Inflammation, and other Symptoms, are more deliberate sometimes, in their unnatural Progress from the Spot first invenom'd, to their Arrival at the main Trunk, than *Turpentine* or *Asparagus* are in their natural Passage from the Stomach to the Bladder. Can such an orderly, and slower Kind of morbid Process, as we have just now described

scribed in the Poison of a Viper, which sometimes will take up Half-hours, or Hours, be the Work of *infected* animal Spirits? Are not the Fineness, and Agility of these Spirits, almost inexpressible? And the Communication they must needs hold with every Part of the animal Oeconomy, both Fluids and Solids, irresistible? Are they not reckon'd Partakers of all the most distinguishing Properties of *Electricity, Lightning, Light, Æther, the universal Elastic Matter*, and whatever else we can imagine most subtil, penetrating, and expeditious? Several great Men have held this; and possibly with good Reason: *Dr. Mead*, speaking of the Manner in which the animal Spirits when infected carry Poisons into the Habit, says*; “ This is done by the great

* Mech. Account of Poisons; Introduction, p. 30.

“ Activity of the nervous Fluid ;
 “ *one Part* of which being infected,
 “ *immediately* taints *all the rest* ; and
 “ thus, the *whole* System of nervous
 “ Expansions is drawn into Spasms,
 “ and Convulsions”. If this be so,
 doth it not seem to follow pretty
 clearly ; since the whole System of
 nervous Expansions is never *imme-*
diately drawn into Spasms, and Con-
 vulsions, when People are bit by en-
 raged Vipers, that the animal Spirits
 must be altogether out of the Que-
 stion, and not tainted in *any Part* ;
 not even at the very Spot of In-
 fection ? Instead of that, there are
 no evident Convulsions, nor is there
 any Want of Sense, or Reason, till to-
 wards the later Stages of the Disor-
 der ; all which must necessarily ensue
 whenever the *whole nervous System* is
 thrown into *Spasms* ; or even but
certain Parts of it.

49. THIS prodigious Elasticity, Velocity, and Irresistibility of the animal Spirits; with the universal sudden Flutter, and Accension, they are deemed liable to, whenever *any one Part* of them is infected; do they not also prove that *no Part* of them is infected, when People are bit by mad Dogs? There is Poison left in the Wound on that Occasion; and there are animal Spirits too at the Part; because the Bruise, Puncture, Scratch, Wound, or whatever else it is, is still felt at the Time; so that the animal Spirits must undoubtedly both meet, and mix with the Poison; and yet, the *whole nervous System* is not *presently* drawn into Convulsions; neither is the Person, who is wounded, made any way uneasy in Body, or Mind, farther than what just proceeds from the Soreness of the Wound; or
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ingenious!

the reasonable Apprehensions he may be under, about the Event of that Accident; all which seems to acquit the animal Spirits; and shew, that however they may perhaps be Accessaries, they never can, without first unspiriting them, be made Principals in the more deliberate earlier Parts of the Mischief that arises from these Causes. Together with what is inferable from the first regular slower Procedure, and *partial* Effects of these Poisons, whilst they act only amongst coarser muscular Parts (a Procedure, and Effects, utterly inconsistent with the universal, irregular Explosions of animal Spirits that are *infected*); do not the *partial Maniæ* of some, who for Years are very sensible, and knowing in many Things, but stark mad in others, shew, that it is impossible that the animal Spirits, which are perpetually

tually interfering with, and affecting every Part of the animal Oeconomy, especially the nervous System, should be their *immediate* Cause? Must we not, therefore, look for these Causes, rather in the Nerves themselves?

These are not always running about like the animal Spirits, and mixing with every thing; but remain *stationed for Life*; each, in its own proper Post; and for that Reason, may, some of them, be greatly, and long, affected, whilst others are intirely free; and may, consequently, much affect some of the animal, and rational Faculties, while all the rest are very orderly, and quiet. This is conceiveable. In the *Hydrophobia*, whilst the Patients are really mad in whatever relates to Dogs, Water, and a few more Particulars; yet, are they not otherwise, in the main,

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grate-

grateful, humane, and rational, for almost the whole Time? Doth not one Part of the nervous System in great Distress; and another, at the same time, tolerably free (except in a secondary way by Consent of Parts), seem to account a little for this; which infected, mad, ubiquitarian, animal Spirits, I doubt, never can, either little, or much?

50. IF the immediate Cause of these virulent, nervous Evils cannot lie either in the Blood, or animal Spirits; the Blood being much too sluggish to be the Vehicle of poisonous Causes, in many of their quicker Sallies; and infected animal Spirits, on the other hand, by much too rapid, penetrating, and excentric, to be the Vehicle in some of their more deliberate, and orderly Movements; and

and vastly too extensive in their Communication, for the *particular*, and *partial* Symptoms, always raised by ingrafted Poisons ; what then remains to conclude, but that the Emotions, Spasms, and Strictures first excited by the poisoned Stimulus in the Nerves and Filaments of the wounded Part, must owe their farther Propagation, and Increase, not to any Poison, or poisoned Fluid hurried about in the Course of the Circulation ; but to the perverted Vibrations of the Nerves * and nervous Filaments, themselves ; * they communicating the new vibrative Action, or rather Passion they received from the poisoned Stimulus, to such Fibres as lie next them ; and these, progressively to others ; and so on, just in the Order of their Contiguity, till the spasmodic Contagion, silently catching from Fibre

to Fibre, and Part to Part, comes, at last, to reach some of the Nerves influencing such Organs as are immediately subservient to Health, and Life; and this seems to be the Point of Time, in which the Spasms, and the Distemper, begin to grow evident.

51. LET me here offer an Instance wherein the Fluids are never supposed to be affected with Poison, or indeed with any thing else; and yet the Symptoms proceed, even unto Death, in almost all respects like those proceeding from the Bite of an *enraged Viper*. Is there any Probability that the huge Swellings in the Arm, with all the other Symptoms and Dangers that sometimes ensue upon the simple Puncture of a Tendon in Bleeding, can arise from any new Default this Puncture can induce

induce among the Fluids? As was said before of the Poison of a *Viper*, what sudden Change can this Puncture make in their Consistence, that should render them less thin, less fine, or less fit to be protruded along their several Capillaries than they were just before? No Poison is received here; and yet a Disorder is generated, whose leading Appearances, if we allow but for some Differences in point of Time, are exactly the same with those exhibited by the Poison of a *Viper*: Their *Advances*, and the *Order* they advance in, are the same; their *Execution*, if they are neglected, or mismanaged, is just the same; and the *Methods of Cure* they submit to, very near the same. The Steps usually taken by the virulent Cause derived from the Bite of a *Viper*, we have considered already. Those usually taken

by the morbid Cause generated by the Puncture of a Tendon, let us consider now; and if we find the Symptoms, Progress, and Execution, as I have represented them, so very like, in both; must not that induce us to believe their working Causes to be altogether as like?

52. As soon as ever the Tendon is pricked, the morbid Cause goes immediately to work; and it works on, without Intermision, and yet without producing either Sickness, or any other constitutional Detriment, till a Swelling is raised in and about the Part: I say *without Intermision*; because if its Operation is once utterly suspended, though but for a *Moment*, the same *material* Cause can never, *of itself*, begin to operate again; which, by-the-by, not only shews
how

how reasonable it is to set about suppressing all this Sort of Causes, early; but, *how easy*, perhaps, *it may be*, to *suppress them*; even by Means, that, at first View, may appear very trifling, and contemptible: But to return. This new Swelling then, gradually increases, as in the Bite of a Viper; an Inflammation then ensues; and the Swelling, and Inflammation, still advancing, come at last to take up the whole Arm, with all that Side of the Neck, Back, and Breast; and if not well treated; and now, soon restrained, assuredly bring on *Sickness*, *Faintings*, *Convulsions*, and *Death*; nearly in the Order, and Manner they are brought on by the Bite of a *Viper*. Have not accidental, simple Punctures of Nerves, and Tendons, in other Parts, been often known to produce the same Effects? In these Cases
too,

too, of nervous or tendinous Punctures, doth not the morbid Cause, for some of the first Hours of its Operation, usually seem as if asleep, and altogether innoxious; not producing the *least apparent Swelling*, or giving the *least uneasy Sensation*? That, from the Puncture of a Tendon in Bleeding, seldom gives any Notice of the Evil till the Day after. Upon the Bite of a Viper, doth not the morbid Cause operate as insensibly, for several Minutes, or Half-hours, in the Beginning of its Progress? The Poison of a mad Dog frequently takes up more Time than either, in its own first underhand, unfelt, and treacherous Advances. Upon the Whole, is there not an apparent Analogy between the Effects of both Causes; that, operating after the Bite of a Viper, and that, after the Puncture
of

of a Tendon; both plainly indicating an equal Analogy between these Causes? And what seems to illustrate this Analogy yet more, is *their Cure*; for, do not the *juvantia* and *lædentia* frequently serve us for very probable Inlets to the Nature of morbid Causes? And is not that smooth lenient Poultice, with which *Sydenham* so easily and speedily allayed the terrible Symptoms excited by the Puncture of a Tendon, in the very Intention, and Manner, of the *Oils*, that happily put a Stop to any farther Progress of those excited by the Bite of a *Viper*; with this Difference indeed; that *Oils*, however lenient and useful in the spasmodic Grievances of all the neighbouring Parts, yet probably should never be brought into immediate Contact with the Body of a pricked

Tendon? This close Affinity between the Causes of spasmodic Emotions raised by Poisons; and the Causes of the same Sort of spasmodic Emotions, not raised by Poisons; do they not seem to acquit the Fluids from being any more faulty in the poisoned, than we have found them in the unpoisoned, Instances just now given? And doth it not seem to evince; that all stimulating Causes, whether poisoned, or not poisoned, that excite the very same Sorts of spasmodic constrictive Agitations in the Nerves, and solid Fibres, and Filaments, shall also, *cæteris paribus*, exhibit the very same Sorts of morbid Effects in the animal Oeconomy?

53. UPON the Whole; is it not probable, though some Part of these poisoned Liquors undoubtedly gets
into

into the Circulation, that still they carry none of their Malignity with them, but leave it all behind among the Fibres of the Part they first affect; thus becoming as innoxious in the Vessels, as the Poison of a Viper does in the Stomach? For, of the poisonous Liquor emitted in the Bite of a Viper, is not some taken up by the venal Capillaries which return the Blood to the Heart; and some, by the absorbent Lymphatics? And yet, if in an Hour after a Man is bit on the Hand by a Viper, the Skin of that Hand and Arm is well chafed with Oil, the Disorder shall never proceed farther, and the Invalid is perfectly cured; though, by the known Laws of the Circulation, that Part of the envenom'd Liquor which comes to the Share of the capillary Veins, must have advanced into the Habit, and

even *passed through the Heart* long before there was any Chafing; and what was absorbed by the venal Lymphatics must, in its own slower Way, have crawled on far out of the Reach of any Oils that could then be rubbed into the Skin, either of the Arm, or any other Part of the whole animal Surface. If then our Patient is cured, though the Oil that cured him never once overtook any of the viperine Liquor, that had, long before the Chafing, slid so deeply into the Habit; doth it not follow, that all that Liquor which it did not overtake, was not poisoned; and that all the Poison was left behind; and lay somewhere within the Reach of the Oil; that is, lay *just under the Skin of the Hand, and Arm, working among the nervous Filaments of the Membrana cellulosa*, where Oil, well chafed

chafed in, can very easily come; and very probably sooth, release, and put an End to, the morbid *Spasmi*, if applied at any time before they propagate their Emotions to the nobler Viscera? Is it not therefore probable, that in all these Cases of ingrafted Poisons, the virulent Cause is not carried about in the Circulation in any Fluid whatsoever, except perhaps towards the last Stages of the several great Disorders they produce; but is

* left behind at the affected Part; and consists in the particular Sorts of spasmodic little Emotions and Strictures, first impressed by each Poison on the nervous Membranes and Filaments of the *Membrana adiposa*; which *Spasmi*, beginning at the Part first affected, are gradually propagated thence, from Fibre to Fibre, till the spasmodic Contagion comes, in time,

to

to take hold of the Nerves governing some *Viscera* that are more immediately subservient to Health and Life; and that then, and not before, the more evident Spasms, constituting both the Distemper, and its Danger, begin to exert themselves? I have elsewhere, speaking of the silent, insensible, and sometimes long Workings of the Poison of a mad Dog, before it produces its Fit of Sickness, compared that, and some other virulent Disorders, which in the Beginning work obscurely in the same manner, with several Disorders of the humoural Kind that play a long, underhand, insensible Game too, before the Sickness they are breeding, comes to Light. These humoural morbid Causes I have represented as vitiating the Fluids by little and little, till the growing Degeneracy arrives at a

Pitch beyond which it cannot proceed without stimulating into Spasms the Nerves that influence the Oeconomy of some of the nobler Organs; which no sooner happens, than the Person finds himself indisposed, tho', during the whole Time of this growing humoural Corruption, he has not had the least Feel of Indisposition. I there hinted as if I had imagined, that virulent spasmodic Causes, set on foot by inoculated Poisons, had, in some measure, infected the Humours, during the first unperceived morbid Proceedings of these Causes: But the Reasons lately insinuated, and a few more to be given hereafter, incline me to believe they do not; but that their Action rather consists in communicating of little spasmodic Vibrations and Strictures to the Solids, without vitiating the Properties of
any

any of the Fluids, until the Distempers they at last produce, become manifest and dangerous.

54. IF it be said, that the Pustules appearing all over the Body in the inoculated Small-pox denote the Poison's having circulated all over the Body too ; it may perhaps as well be said, that, no Pustule, or Disorder, or Feel of Disorder, presenting any-where for the first eight or nine Days after the Inoculation, no Poison has therefore circulated any-where for these eight or nine Days : For, is not the variolic Matter, used in Inoculation, generally reputed virulent ? And the first constitutional Effects of virulent Causes, are they not generally deemed nervous ? The *Virus* therefore of the Small-pox, if it affects any Fluid at all, must immediately

diately both affect and infect the animal Spirits ; that only Fluid by which the Passion, as well as Action of the Nerves is supposed to be governed : And can the animal Spirits be infected for Hours, not to say Days, without the least Symptoms of Disorder in any one Part of the animal Oeconomy ? Is this likely, or indeed conceiveable ? And yet all this must follow, upon a Supposition that the inoculated Small-pox is originally an humoural Cause ; and that the variolic *Virus* acts by immediately tainting the Fluids. On the other hand, is it not very conceiveable, that a virulent *Stimulus*, applied to the Arm or Leg, may, just at the Place of Application, excite preternatural *Spasmi* among the nervous Filaments ; and that these Filaments, thus agitated, may propagate the Sort of morbid Vibrations

they themselves are infected with, to other Filaments that touch and surround them; and these, their own to others; and so on, till, in this progressive slower Way of giving and taking morbid *Spasmodi* from Fibre to Fibre, and Part to Part, the vibrative Contagion gradually arrives at the nobler *Viscera*; at which time the Person inoculated just begins to find himself Sick? Doth not this slow, regular, contagious, unailing, insensible Progress of the virulent Cause, thus silently acting along the *Membrana cellulosa*, and among the coarser Solids, seem to agree with all the Conditions of this Infection for the first eight or nine Days of its latent Operations? Though whether it possibly can, with the more precipitate Action, and spasmodic nervous Effects, of this same virulent Cause,

Cause, hurried about with infected animal Spirits, I leave others to determine : But to return ; As soon as the Spasms have reached the nobler Organs, and the Patient grows sick, instead of such obscure and unfelt *Spasmi* as were before confined to the coarser muscular Parts, and did not affect any of the greater Operations of the animal Oeconomy, there are now much stronger and more effective ones set on foot in other more essential Parts ; and these, disturbing and perverting the Secretions every-where, must necessarily disorder and corrupt the Fluids every-where ; from which new superinduced sudden Corruption of the Fluids, and the so often mentioned *partial Tendency* of the virulent Cause, all the little Obstructions, Swellings, and Inflammations

of the Small-pox, are poured out, as usual, upon the Skin: And this second, and more evident Stage of the morbid Operations, from the Patient's first Symptoms of Illness, to the beginning general Eruption of the Pustules, takes up between two and three Days, and sometimes longer; after which, the Pustules commonly advance, suppurate, ripen, decline, and go off, like all other ordinary little inflamed, suppurating Tumors; with this Difference, and perhaps no other, that their *Pus,* and *Exuviae,* are impregnated with contagious Particles from the Solids; for, though the Fluids seem to be so little concerned in the first insensible and more deliberate Advances of these virulent Causes, yet when these Causes afterwards come to produce their several Distempers, and the

3

Spasms

Spasms among the more essential Organs are raised to their highest Pitch of Agitation, is it not probable, that such of the Fibres as are most engaged, and are now convulsed, and shaken, and distressed in all their Parts, shall throw off among the Fluids, much larger Particles, and many more of them, than they used to do whilst they only performed their own natural calm Oscillations? And that these larger Particles may, after their Separation, retain enough of the tremulous Virulence, and perhaps other poisonous Qualities of the Fibres they quitted, to be able to communicate the same to the Fibres of Persons whose Solids are disposed to receive these Kinds of Infection; or, in other Words, to be agitated with these Kinds of morbid Vibrations? Is it not observable, that the

Small

Small-pox is seldom, perhaps never, given, in any of the ordinary Ways of Contagion, till it has first arrived at the Summit of its Malignity? And is it not probable, that all these Poisons are only communicable with any bad Effect, after the Infection has passed from its first insensible Workings, to its last decisive Agitations? The nearer a mad Dog is to dying of his Madness, the stronger and the more dangerous is the Poison he emits.

55. WHETHER in the almost infinite Variety of the Spasms, and spasmodic Emotions, an animal Fibre is liable to from different Causes, there is any real specific Difference; or only that comparative one resulting from their being greater or smaller, stronger or weaker, seems

seems to deserve a little Enquiry here, some Phænomena contributing to make it probable, that an animal Fibre, thrown into morbid vibrative Emotions by any poisonous Cause, shall communicate the very Sort of Emotions it has got itself, to the Fibres that immediately touch and surround it; and these again to such Fibres as touch and surround them, and so on, catching and communicating morbid *Spasmi* from one to another, till by degrees the Circulation at the Part first affected, comes to be restrained; a Swelling begins; an Inflammation ensues; both increase; the *Spasmi* multiply; and the Symptoms proceed as before described in the Puncture of a Tendon, and the Bite of a Viper? And is not this probably the very Order, and Manner, in which the Poison of a Viper

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 Viper first makes its Way in the Habit ? In the Bite of a *mad Dog*, let us imagine the first excited morbid *Spasmodi* to be of another Composition ; and withal, comparatively smaller and weaker ; the Vibrations and Strictures, excessively minute and languid ; and their Communication and Progress proportionably remis ; so remis, and obscure, that neither Swelling, Inflammation, Pain, or any other morbid Effect, is produced or perceived, till these *Spasmodi*, in their own languid creeping Way, sooner or later, according to the predisposing Circumstances, come to touch upon and affect such Parts of the nervous System as govern the private Oeconomy of some of the *Viscera* that immediately administer to Health, and Life ; of which particular Nerves, the spasmodic Emotions

tions at the same time excite the frightful Ideas of Dogs, Water, &c. with which these poor People are maniacally agitated ; for, if certain Ideas affect only certain Nerves without affecting others ; must not the wrong Affections of certain Nerves excite certain wrong Ideas, without exciting others ? But should it be objected to the Probability of all this, that if the first morbid Effects from the Poison of a mad Dog, are, as they are here supposed, vastly weaker, and slower, than those from the Poison of a Viper ; its last morbid Effects ought to be vastly weaker, and slower too, which is what they certainly are not. This may seem plausible at first Sight ; but let it be considered, that the real Greatness or Littleness of symptomatic Effects in the animal Oeconomy is never to

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be estimated from the apparent Greatness or Littleness of their working Causes ; the most languid, unheeded, and seemingly insufficient Causes very often producing the most violent Effects ; as tickling the Soles of the Feet lightly with a Feather, shall throw People into Convulsions, when currying them with a rough Piece of Canvas will have no disagreeable or dangerous Effect at all.

56. As to what relates to that Communicableness before touched upon, of spasmodic Emotions from one infected Fibre, or Set of Fibres, to such others as lie in Contact with them ; and that this Communication is not of mere morbid Vibrations indiscriminately, but of the very Sorts of morbid Vibrations with which the

first stimulated and convulsed Fibres
are themselves infected ; can this
 seem improbable, when we have so
 many Instances of a like Communi-
 cableness, not of simply spasmodic
 Emotions only, but of complicated
 and similar spasmodic Emotions,
 even at a Distance ? Are not Laugh-
ing, and Crying, spasmodic Emo-
 tions, and readily communicated by
some to others ? By what latent In-
 tercourse of spasmodic Affections be-
 tween the distant Nerves of these
 Persons this is done ; whether it is
 like that between two, or more,
 distant musical Strings tuned in
 Unison ; or what it is like, I am
 not here concerned to inquire : I
 only mention it as a *Fact*, in which
 it appears that *similar Spasms are*
communicated, at a Distance, from one
Set of animal Fibres to another.

Hysterics too have been suddenly
caught the same Way ; and so have
unreasonable Panics. Have not the
fanatical Agitations of some religious
Enthusiasts been communicated to
Lookers on, in spite of all their
own Endeavours to oppose them ?
 And, doth not a Person yawning,
 communicate his Yawn, and no
 other Sort of Convulsion, to almost
 as many as see or hear him ? These
 spasmodic Emotions, then, each re-
 gularly generated according to the
 Kind that possesses the Infector ; the
 very same Sets, and little Systems,
 of Fibres still convulsed in each ;
 and all communicated at a Distance ;
 are not these more difficult to con-
 ceive possible, were they not real
 Facts ; and much more difficult to
 account for, as Facts, than any Com-
 munication of Spasms, or spasmodic
 Emotions,

Emotions, that can be imagined to subsist between Fibres that lie together in Contact, and are, in other respects too, uninterruptedly connected one with another?

57. The Small-pox is sometimes communicated, at great Distances,
 * by a Fright. The first Effects of Frights, most certainly, are spasmodic. They sling some of the Nerves into convulsive Emotions, and Strictures; and but some; for, with the whole nervous System either in Spasms, or in a Palsy, there is no living a Moment. Other Sorts of Frights generally produce other Disorders, if they produce any; this, gives the Small-pox; and not the Measles, or the Plague, or any other Distemper. Must there not be somewhat peculiar, and specific, in
 both

both Causes ; in the remote, as well as the immediate, to produce this particular Distemper ? The immediate productive Cause, here, is the Spasm ; the remote, the Fright that caused it ; and the Small-pox, the Effect of both ; but why, among the numberless other possible Effects to be caused by Frights, and Spasms, this only should emerge, as it generally does on these Occasions, is the Question ; and is it not, probably, because this particular kind of Fright, excites spasmodic Emotions of a particular Composition, among certain Parts of the nervous System ; which Parts, thus agitated, are qualified to affect the animal Oeconomy in that precise, determinate Manner, that shall produce that very Distemper, and no other ? Is it not therefore also probable, as was before

before hinted upon another Occasion, that any Cause, whether it is a stimulating one obtruded from without, or an Idea roused up, and agitating, from within, that can draw just the same Parts of the nervous System into just the same Kinds of spasmodic Emotions; that the morbid Effects produced in the animal Oeconomy shall be, very nearly, the same, whether the Emotions are first excited by such a *particular Sort of Stimulus*, or such a *particular Mode of thinking*? And, is it not in much the same manner, that catching Cold, or perhaps eating or drinking some improper thing, or being discomposed in Mind, shall, any of them, indifferently, throw some Persons into the very same Disorders?

Imagination highly stretched!

58. If then to suppose either the animal Spirits, or the Blood, or any other

other Fluid, to be the Vehicles of Poisons in the animal Oeconomy, appears to be incompatible with many of the Phænomena that successively arise in the different Times, Movements, and Effects, of most ingrafted poisonous Causes, especially that of the mad Dog; and (what is of greater Consideration still) if all the Practice that ever yet was instituted in this forlorn Case, hath always been founded on that very Supposition; always levelled at purifying the Fluids from imagined Virulence, and Corruption; and always uncertain, or fatal*; doth it not

* Ex tota hoc historia constat hujus mali cognitio: Prognosis autem elicitur ex consideratione, &c. simulque cogitando tristissimos ubique effectus, quum a nata medicina hucusque, omnes fere artis principes deplorent, *Demorsorum prophylaxin vix ullam certam haberi; at jam aquam paventium sanatorum, exemplum dari certa fide nullum!* Maxime vero dolendum, post

not evidently follow, that we ought to look out for this Virulence, somewhere else; and practise, in some other manner? Are not the Solids therefore to be deemed the chief Propagators, as well as Seats of it? And, is it not probable, that this Poison of the mad Dog in particular, during its first insensible latent Operations, which is the Time for using Prophylactics, acts only among the nervous Filaments of the *Membrana cellulosa*, in the slow, spasmodic, contagious, progressive manner hitherto suggested; the first excited *Spasmi*, always extremely languid,

post sæcula elapsa, irritum successum hactenus applicatorum deplorantia, non esse tentatas diversas a primis methodos. Boerh. Aph. 1139.

Curatio omnis hactenus, paucissima exceptis, incerta, tam prophylactica, quam therapeutica; cujus prima causa, inanis jactantia multorum specificorum, et neglectus methodi ex historiâ mali excogitata. Aph. 1141.

and easily suppressible; their Progress; somewhat stronger, but suppressible still; and their Ripeness, when the nobler Organs come to be engaged, and the *Hydrophobia* begins, not only very violent, but very dangerous; though, it seems, not utterly insuppressible when treated before the great Spasms bring on the Inflammations they so usually generate, if they are not calmed and suppressed in due time?

59. If, as we have said before, this Poison of the *mad Dog* does not at first circulate with the Fluids, any more than that of the Viper: If its first Action consists in little vibrative insensible Emotions, and Strictures among the nervous Filaments of the Part bitten: If these morbid Vibrations are of a certain

certain Kind, and Composition, peculiar to that very Poison : If they are at first exceedingly languid, as seems yet farther probable from the usual easy Healing of the Sores : If their Advances in the Habit are made in the progressive Way of communicating the *Spasmuli* along the *Membrana cellulosa* : If the Movement and Progress of these venomous *Spasmuli* are generally very slow, as appears by the long time they often take before they come at the nobler Organs, and produce the *Hydrophobia* : On all these Accounts, doth not the Case appear to be *topical*, as well as *spasmodic* ? And must not all our Prophylactics aim at an utter Suppression, or Extinction of the virulent *Spasmuli*, in, and about the Parts bitten ? which, once effected ; can any eminent Organ come to be

distressed? or any *Hydrophobia* be produced? In order to the utter Suppression of the virulent *Spasmi*, in, and about the Parts bitten, do not two main Indications present themselves; which, though seemingly very different, yet tend to the same good Purpose; one is, to calm the *Spasmi*, and release the little morbid Strictures of the Filaments; and this is to be done, either by the outward Application of soft, lenient, antispasmodic Remedies, to the Part affected; or, by the internal Use of Medicines that are known to possess the Virtue of calming, allaying, and suppressing, Spasms, and spasmodic Emotions, where-ever they may happen, within the Habit. The second Indication, so different from the former, is, to suppress, and put a Stop to the present morbid spasmodic Agitations

Agitations of the nervous Filaments, by stimulating them into other Spasms of a different kind, that shall be stronger in their first Effects, but not dangerous in their Tendency ; thus counteracting and destroying one sort of Spasms, by introducing another.

If the Poison of a *Viper* is restrained by Measures analogous to these, why that of the *Mad Dog* should not, will, I believe, be difficult to assign :

And first, as to the *calming Indication* ; doth not chafing with some *Oils* all round the Part bitten, hinder any further Propagation of that *Virus*, and secure the Patient ? And how, but by calming, and suppressing the morbid *Spasmi* in the *Membrana cellulosa* ? For, as to sheathing of any invenomed *Spicula* of these Poisons, though I just mentioned it elsewhere, I have no

Opinion

Opinion of it ; because, if the Poisons fall to work the Instant they are emitted, they must surely have excited their virulent *Spasmuli*, and thus have sown all their Seeds of Mischief, before there can possibly be any Sheathing ; which shews still the more clearly, that chasing with Oils succeeds in the Bite of a Viper, not by sheathing of Spicula, but by releasing of Spasmuli, just as Sydenham's emollient *Cataplasm* succeeds in the Puncture of a *Tendon*, where there are no *Spicula* to sheath. Now, as to the *Second of our Indications*, which we may call the *stimulating* ; the Poison of Vipers hath been effectually suppressed that Way too ; for is not the Action of Fire certainly stimulating ? And hath not scorching the Parts bitten restrained that Poison, and cured several Persons,
according

according to Mr. *Boyle* ? Which probably must be by changing the first virulent, and weaker *Spasmodi* excited by the Poison, into others of a stronger, but less dangerous Kind, excited by Fire ; for it hath been already hinted, or rather indeed proved, that the whole Malignity of all these different Poisons consists in the peculiar Kind and Composition of the *Spasmodi* they first excite ; and that it is, for some time, confined to that Centre of Contagion, the Spot first infected, and its Neighbourhood : Does it not then seem very likely, that scorching with Fire ; searing with Caustics ; stimulating with Salts, and other pungent Applications ; chafing with Oils ; or proceeding by any other Method, whether topical, or internal, that shall calm and release ; or counter-

act, and subdue, the first little languid Nibblings of the Poison of a *mad Dog*, as yet only creeping along the *Membrana cellulosa*; is it not very likely, I say, that such Means shall assuredly hinder any farther Propagation of that *Virus* to any of the nobler *Viscera*; and consequently, prevent the *Hydrophobia*; as before remarked?

60. The sooner therefore, after any one is bit by a *mad Dog*, some of the most convenient of these Methods is brought into Practice, the better. A very Trifle, early enough applied, may subdue an Infection, whose first Movements are so extremely languid: They are usually so slow too, that if some time should have elapsed between the Bite and the Assistance, we nevertheless, may
well

well hope to succeed ; differently from what we have been accustomed to persuade ourselves, whilst, instead of taking our Opinion and Measures from its first infantine Feebleness, we took them rather from that last Fury with which it rages in the *Hydrophobia* ; as if we were to play a Fire-engine on a single Spark, because it may one time come to burn a City. Hath not this preposterous Method of taking Indications for the Cure of Disorders, not from *what they really are*, but *what they may possibly come to*, produced many fatal Errors in other Articles of Practice, as well as this ; and harassed, and hurried Numbers out of the World, who might have been kept alive, nay, restored to good Health, under less precipitate Management ? Is it not to this same mistaken

Forecast that we owe the repeated
Terrifyings, Sea-dippings, and other
 boisterous and contradictory Measures
 now so often set on Foot as soon as
 People are bit by *mad Dogs*? Not
 to say, that the Boastings of some,
 with their Specifics, which *Boerhaave*
 complains of, and calls *inanis jac-*
tantia multorum specificorum; and
 the established Notion of *poisoned*
Fluids, have all along amused the
 World into an utter Inattention to
 the regular Use of such topical Ap-
 plications, and internal Medicines, as
 are really qualified to answer in this
 Case; thus unhappily betraying
 Numbers into the *Hydrophobia*, who
 otherwise would have escaped, only
 by applying a little Salt, a Slice of
raw Onion, scraped Horse-radish,
Cantharides, Vinegar, Spirits of Wine
with Camphire, or almost any other
 stimulating,

stimulating, innocent thing, to the Sores ; taking the Musk and Cinna-
bar Powders, Assafoetida, Camphire,
Castor, Wild Valerian, or any other
principal antispasmodic Medicine,
two or three times a Day for some
time together ; and well chafing the
Parts all round the Sore, with some
penetrating, lenient Oil impregnated
with Camphire ; for which Purpose,
 is it not probable, that some animal
 Oils may serve better than any that
 are of vegetable Extraction, as they
 are generally more penetrating, and
 at the same time, equally calming?

61. I cannot here forbear to wish,
 that proper Persons were to be in-
 oculated with the Small-pox ; a
 Course of antispasmodic Medicines
 persisted in, for eight or nine Days ;
 the Incisions to be treated as we have

now proposed in the Bite of a mad Dog ; the Parts all about them to be chafed with some camphorated animal Oils ; and all, to commence a Day or two after the Inoculation ; to try whether these Means may not put a Stop to the farther Progress of that *Virus*. If they should, it must establish the Reasonableness of this whole Theory ; and yet, if they should not, it can weaken it but little ; considering one great Difference that must always subsist between these two Poisons ; which is, that some particular native Disposition in the Generality of Mankind lies so open to the Infection of the *Small-pox*, that People often take it without any foreign Contagion ; whereas none ever breed, or take the *Hydrophobia* in that manner ; so that the natural Disposition,

and

and the variolic Poison, joining Forces, may prove too many for the *Oils*, and other Expedients; which the Poison of the mad Dog alone, without that Concurrence, may possibly not be able to withstand.

62. With regard to the prophylactic internal Use of Medicines; ought we not to give the most approved Antispasmodics in sufficient Doses, as soon after the Bite as may be; to be continued twice a Day, especially some Days before, and some Days after, the new and full Moons, for a considerable time together? If a timely, though too sparing an Use of the *Musk*, and *Cinnabar* Powders, has been able to suppress the Effects of this Poison, and prevent an *Hydrophobia*, in some; and that a more plentiful Use of it, with

with some other Helps, has even subdued the *Hydrophobia*, in others; what in Reason may not be hoped from an early, judicious, and sufficient Course of that, or of some others of the first Class of the anti-spasmodic Remedies, in a Case that is really and essentially spasmodic, from first to last; and when it comes to the *Hydrophobia*, is so like *Hysterics* in many of the odd Characters *Hysterics* assume, that all their Difference might, at first View, seem to lie in their Effects only, and little or none in their Aspect? For hath a Symptom ever yet appeared in the *Hydrophobia*, not excepting even the *Dread of Water*, that has not, at one time or other, started up in hysteric Disorders? And, if they have not a *Dread of Water*, have they not often other maniacal Dreads, and

and Apprehensions, altogether as
 vain? May we not therefore, ven-
 ture to consider the *Hydrophobia*
 merely as a *virulent Hysteria*? But
 to return to Prophylactics.

63. The Salt Water Dippings,
 now so frequently practised as soon
 as People are bit by *mad Dogs*, are
 meant, I suppose, by way of rousing
 the Constitution to make the strongest
 and quickest Efforts it can, to expel
 a Poison now believed to circulate in
 the Habit; and, it seems, these Dip-
 pings are indiscriminately, as well as
 frequently, practised. How far this
 is safe, or reasonable, may deserve a
 little Consideration; since there are
 many constitutional Circumstances
 that may render these Immersions,
 let them be intended for what they
 will, not only dangerous, but de-
 structive.

structive. There are certain Degrees of a general Relaxation of the whole Habit; and there is a certain Languor of Circulation in the capillary Vessels of the superficial and extreme Parts, that may, sometimes, require them; but as the Effects of Sea-dippings, and cold Bathing, are purely relative, and conditional; is it not one general and necessary Condition in their Use; *That a kind of Equilibrium must subsist among the nobler Viscera, in their Secretions, and other Offices, before any one can be qualified to receive Benefit, and no Injury, from that violent Operation?* Is any considerable *Viscus* weakened, or obstructed? Are there latent glandular Indurations, or obscure inward Ails from an increased Defluxion on any delicate Organ? Is the Habit full, foul, or leucophlegmatic? In

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many

many of these Cases, shall not cold Dippings be sometimes prejudicial, sometimes pernicious, and sometimes even fatal? In stuffed, weakly, ferous Habits, have they not produced incurable Dropsies? If any eminent *Viscus* happens to be weaker, or more flaccid, than its Fellows, is there not, for that Reason, an additional morbid Flow of Humours already determined that Way? And must not the first constrictive general Effects of cold Immersion always hurry them with a new *Impetus* where-ever they are least opposed, which is still at the weakest Part; and which, every new Irruption must weaken still more? And must not weakening any principal Organ, both weaken and endanger the whole Constitution? Now, if the genuine Perfection, and natural Workings,

and Efforts, of the Constitution itself are the principal Assistants in subduing any Malignity it entertains, whether humoural or spasmodic ; can it be imagined that any Measures that shall tend to impair its Forces, can tend to subdue its Enemy ? Is it not on this Account that the old, trite, preparatory Course of Bleeding, Purging, and low Living, ought never to be admitted, but under the nicest Restrictions, when People are to be inoculated for the Small-pox ; or fear they may take it the common Way ; or happen to be apprehensive of any other contagious Distemper that rages where-ever they are ? And since of the ailing tenderer Part of Mankind, so few are qualified to escape being one Way or other much the worse for these cold Dippings (for how few are there after Forty, and how many even before, can say they are

quite

quite well, *i. e.* quite sound ?) ; and since People of this sort are as liable to be bit by mad Dogs, as others ; is not the promiscuous, and repeated Use of so violent a Remedy, very questionable ; unless it can be supposed that being bit by a mad Dog, shall, like a Charm, immediately serve to protect a Pair of injured Lungs, a bad Liver, weak Intestines, a disordered Brain, or any other impaired or declining Organ, from the first ruinous Onset of every one of these Immersions ? or that it is imagined that there is no Way of subduing that Poison, but by destroying the Constitution it lurks in ?

64. But setting aside the unqualified, let us see how the qualified are to be helped by these Dippings. There is Poison, they say, lodged in

the Habit, and it must be got out as soon as possible. Be it so ; but how do they operate to make them so very likely to effect that ? Is it not supposed that the constrictive Shock the animal Oeconomy receives on these Occasions may dislodge the Poison, and hurry it off in one or more of the Secretions which at the same time are believed to be enlarged, and set a going ? The Secretions oftenest moved by this Process are those by the Kidneys ; and sometimes the Perspirations, each in their Turn. That by the Kidneys seems to be more directly promoted by cold Immersions, and with less constitutional Trouble, than either of the Perspirations ; and yet how little it is to be relied on in spasmodic Ails, is inferrable, not only from the Conduct of Nature, which scarcely

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ever

ever aims at relieving herself that Way ; but from this Circumstance ; that a greater Flow than ordinary of Urine is oftener a Symptom of Spasmodic Distresses elsewhere, than an Effect which can release them anywhere, except by mere Accident. As to insensible Perspiration, how often, or how seldom, spasmodic Disorders are released by its Augmentation and Influence, I shall not here inquire ; but Sweating (as we have observed elsewhere) is ever ready in all constitutional Exigencies, whether humoural, or nervous, virulent or common ; neither can it, I believe, be positively affirmed of any of these, that it is ever completely subdued, without its Ministry, or Concurrence. If then, to make the Patient sweat be what is chiefly intended by these Sea-immersions

merfions (or indeed what else can
 reasonably be intended)? are there
 not much eafier, furer, and fafer
 Methods of procuring gentle Sweats,
 which are ever preferable to Sweats
 extorted by dint of Agitation, and
 Violence, than being plunged into
Sea-water till People are half-dead;
which laft Circumftance, it feems,
paſſes for half the Cure? The great
 Profeſſor *Boerhaave* gives an Inſtance
 of a Perſon who was bit by a *mad*
Dog, and was afterwards ſhipwreck-
 ed, but through many Overwhelm-
 ings, and much Danger, made a
 Shift to eſcape. This Man's dying
 of an *Hydrophobia* ſome time after
 all theſe Immerſions, inclined the
 Profeſſor to think that all the Ad-
 vantages accruing from that Opera-
 tion muſt proceed rather from the
Frights and Terrors to be impreſſed,
 with

with great Threatenings, and a mighty Apparatus of Danger, than from the Immerfions themselves : But might not that fame Instance have ferved to put him out of Conceit with the Frights too ; and let him fee they fignified juft as little as the Immerfions ; fince this poor Man was certainly as well frightened during the Plungings and Shocks he really underwent on that dreadful Occafion of his Shipwreck, as he could afterwards have poffibly been by any artificial mock Methods of Terror his Friends could put in Practice, either to agitate, or cure him ? In the Cafe now before us of *Elizabeth Bryant*, it appears that ſhe was dipped in the Sea till ſhe could bear it no longer ; and that ſhe was afterwards bathed in cold Water at home for feveral Days together ; all which,

which, instead of removing, or even allaying any of the prefatory Symptoms she had then complained of, but aggravated them every one ; and instead of preventing, seemed rather to have promoted the main Disorder :

Add to this, that of the Numbers we hear are bit by *mad Dogs*, and die of the *Hydrophobia*, there are very few who have not first tried the Merits of this faithless Specific.

65. The general Uncertainty of all the Methods that have been recommended to prevent the *Hydrophobia*, and the utter Insufficiency of all that have been practised to cure it, seem to owe their long, uninterrupted Possession, partly to Inattention, and partly to certain Opinions, let me call them Mistakes, that have almost universally obtained concerning

ing the Nature of the Poison of mad Dogs, the manner of its operating in the human Body, and the true Genius of the Distemper it produces. To think with any Degree of Clearness, or judge with any Degree of Probability, of the Nature and Operations of ingrafted Poisons; the different Effects they exhibit in two very different Stages of their Progress, must be carefully attended to, and nicely distinguished: The first Stage, I may call, that of their earlier, weaker, and more obscure Passage along the *Membrana cellulosa* among the coarser and less essential Parts: The second; that of their last, and more evident Exertions, when the venomous *Spasmi* have made their Way to the nobler Organs. The first produces neither real Sickness, nor immediate

Danger : The second produces both : In the first, the Evil is merely topical ; confined to one Part only : In the second, it is diffused, and, in some measure, affects the whole animal Oeconomy. Besides this more general Distribution of the Operations and Effects of these Poisons ; there occurs in what I call the second Stage of the Poison of mad Dogs, a Succession of Causes, and Effects, very necessary to be acquainted with ; for, though a beginning *Hydrophobia* is purely nervous, yet where it is suffered to proceed, it generally becomes complicated with the most pressing Inflammations, which still usher in the additional Symptoms that always belong to themselves : And thus, from a Distemper, at first, but simply spasmodic, it becomes mixt ; and is

compounded both of the spasmodic and inflammatory ; whilst therefore we took all these successive different Actions and Effects, that occur in the Progress of this *Virus*, as it were in the Lump, without so much as being aware of the very Existence of any such Differences and Effects ; and consequently, without knowing either how to investigate, or oppose, their several different constituent Causes ; it is no Wonder we have advanced so little towards establishing any solid Principles to found a regular, and accountable Method of Practice on, either for the Prophylactics, or Cure, of the *Hydrophobia*. Another Source of much fruitless and fatal Practice in this Case, was ; that the Fluids of one Denomination or other, and consequently the whole animal Oeconomy, were

still thought to be poisoned as soon as People were bit by *mad Dogs*. This unhappy Notion seemed very plausible, maintained its Ground very peaceably, and gave rise to a monstrous Medley of blind and desperate Efforts to prevent an *Hydrophobia*, by hurrying a Poison out of the Humours, that was never in them.

As to the *Cure* of that Distemper; hath there not been a Foundation for perpetual Mismanagement, deep laid, in the Opinion of its being highly inflammatory from the very Beginning? What Bleedings, what Clysterings, what Coolings, what Inconsistencies, have not been practised upon that false Supposition? Then, with regard to the Contagion, Malignity, Modes of Operation, and other cardinal Properties of virulent Causes; what they consist
in,

in, what they agree in, and how they differ ; I say nothing of any Opinions concerning these, that have done either Good, or Hurt : But that *Tendency*, so often before taken notice of, which *Poisons*, and almost all other foreign Agents, discover, of fastening, as it were by Choice, on certain Parts only of the animal Oeconomy ; and each on some select Part of its own, still leaving all the rest of the System comparatively unaffected ; this partial Tendency, though we may perhaps be never able to assign its Cause, or Causes ; yet, as a *Fact*, we can apply to the Solution of many Questions and Difficulties in our *Pathology* ; which, upon any other Principle, are extremely hard, if not indeed altogether impossible, to account for. Among many of this Sort, let me
ask,

ask, how it comes to pass, that Numbers of People, of different Sexes, and very different Ages, Constitutions, and Ways of living, shall, much about the same time, be taken ill of some epidemical Distemper that shall lay hold of them all in just the same Parts very nearly, and in just the same manner ; and this, in spite of the prodigious Difference that in many respects must undoubtedly subsist between all these Persons ? Must not this proceed either from some *latent Tendency* of the *common morbid Cause* to affect rather such and such a Part in such a manner ; as the *Throat*, for Instance, in a *Quinsy*, the *Pleura*, in a *Pleurisy*, and so on ; than any other Parts of the whole animal System ? Or else, from the Tendency of this same epidemical morbid Cause to dispose
such

such a Part of the animal Oeconomy, as it were, preferably to others, to be affected and influenced by some other *immediate* Cause ; thus, either way, affecting such particular Parts ; whether we take it for the immediate, or predisposing, Cause of the Distemper ? As to the different kinds of *epidemical Fevers* ; of which one is epidemical in one Constitution of the Air, and Seasons ; another in another ; and each, differing very widely from the other ; I believe, the greatest Difference between all these kinds of Epidemics, with regard to their Symptoms, Progress, Duration, and Danger, will, on a closer View, be found to consist, chiefly, in the Difference which, in point of Usefulness, and Station, subsists between the particular Organs that are more directly and mainly attacked

attacked in each ; still taking into Consideration the manner they are attacked in ; which seems to shew that there is a Tendency in the epidemical morbid Cause to seize upon those particular Organs more immediately and directly, than any others. Let me also observe by the bye, that this same *partial* Operation, and Tendency of foreign Agents, seems to confirm the antient Doctrine of the elective or specific Operation of purging Medicines, already so well enforced by Dr. *Martyne*, in his learned Essay on that Subject.

66. I must not omit to take notice of that particular strange sort of cutting Pain *Elizabeth Bryant* felt in her bitten Hand, and that whole Arm *. It began with the *Hydro-*

* See the Case, p. 10.

phobia, and did not end till she was a great deal better. Doth it not shew, how much more the Poison exerted itself along that Arm, as in its own proper Sphere of Action, than any-where else ? Are there not many Parts of the animal Oeconomy vastly more sensible, and more obnoxious to the painful Action of *Stimuli*, than the Arm ? If the Poison had been carried about in the Circulation, must not this painful Effect have been displayed and felt more equally ? and some other more sensible Parts been affected with the sort of Pain she felt in her Arm ; or with a worse ? And yet it seems that extraordinary Pain was confined to that Arm, and the Parts immediately connected with it ; such as the Shoulder, Neck, and Throat ; where it still seemed to her to end ;

the Pain suddenly returning to the Hand, and darting successively along that Arm, and no-where else. It is true, she felt some degree of Pain almost all over ; but it was of quite another kind, and by no means so acute, or terrible ; and she had Catchings too, all over ; but were they not, probably, symptomatic, and from a mere Consent of Parts ? The Pains first ushering in the *Hydrophobia*, are found sometimes, though very rarely, to begin at a Distance from the Parts bitten ; but may not this happen by Consent of Parts too (for Pain is sometimes felt at a great Distance from its Cause) ; as a Stone in one Kidney has raised a constant Pain in the other that was found, whilst the Patient had not the least Feel of Pain in the Kidney affected ?

67. THE Pimples that broke out on *Elizabeth Bryant's* Hand two-and-thirty Days after she was bit ; whilst they shew, that the Circulation was a little affected at the Part ; they shew yet farther, how great the Languor of the *Spasmuli*, and how slow their Procedure in affecting the Circulation, must have been, considering the Length of Time between the Bite, and the Appearance of these Pustules ; as, their vanishing so suddenly, seems to indicate how little the Humour they produced was infected with any Poison. It was observed elsewhere, in speaking of the Poison of Vipers, and the *Spasmuli* they excite, although they do not cause Sicknes till their Influence hath reached the nobler Organs ; yet nevertheless, they are capable of disturbing the Circulation
all

all over the Neighbourhood of the Puncture, so as to produce Swellings, Inflammations, &c *. Here, the *Spasmodi* excited by the Poison of a mad Dog have done the like; but then it was in a much inferior Degree; in a Degree almost next to nothing †: However, the Use of Caustics to the Part, in the manner of some antient Practitioners, will serve to counteract the venomous *Spasmodi*, as before hinted; or if they cannot be applied to the very Part, the inserting them any-where near, especially above the Sore, may help to intercept their farther Progress towards the greater *Viscera*.

* See Q. 45.

† See Q. 55.

1 October, 1919.

F I N I S.

42. All Nature vibrates:

-3. no body really moves in a right line:

